SONY.

VIDEO GRAPHIC PRINTER

UP-980
UP-980CE

SERVICE MANUAL

1st Edition

SONY.

⚠ **WARNING**

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

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SONY.

3-862-475-01 (1)

Video Graphic Printer

Instructions for Use   Page 54 _____ EN

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UP-980
UP-980CE

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This section is extracted from operation manual.

Owner's Record

The model and serial numbers are located at the rear.
Record these number in the space provided below.
Refer to these numbers whenever you call upon your
Sony dealer regarding this product.

Model No. _____

Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit
to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer
servicing to qualified personnel only.

Symbol on the products

This symbol indicates the equipotential
terminal which brings the various parts of a
system to the same potential.

For the customers in the U.S.A.

This equipment has been tested and found to comply
with the limits for a Class A digital device, pursuant to
Part 15 of the FCC Rules. These limits are designed to
provide reasonable protection against harmful
interference when the equipment is operated in a
commercial environment. This equipment generates,
uses, and can radiate radio frequency energy and, if not
installed and used in accordance with the instruction
manual, may cause harmful interference to radio
communications. Operation of this equipment in a
residential area is likely to cause harmful interference in
which case the user will be required to correct the
interference at his own expense.

You are cautioned that any changes or modifications not
expressly approved in this manual could void your
authority to operate this equipment.

This device requires shielded interface cables to comply
with FCC emission limits.

For the customers in Canada (for UP-980 only)

This unit has been certified according to Standard CSA
C22.2 No.601.1.

For the customers in Europe

Important safeguards/notices for use in the medical environments

1. All the equipments connected to this unit shall be
   certified according to Standard IEC601-1, IEC950,
   IEC65 or other IEC/ISO Standards applicable to the
   equipments.
2. When this unit is used together with other equipment
   in the patient area*, the equipment shall be either
   powered by an isolation transformer or connected via
   an additional protective earth terminal to system
   ground unless it is certified according to Standard
   IEC601-1.

   * Patient Area
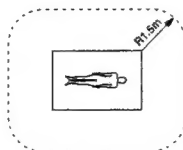
3. The leakage current could increase when connected
   to other equipment.

4. This equipment generates, uses, and can radiate
   frequency energy. If it is not installed and used in
   accordance with the instruction manual, it may cause
   interference to other equipment. If this unit causes
   interference (which can be determined by unplugging
   the power cord from the unit), try these measures:
   Relocate the unit with respect to the susceptible
   equipment. Plug this unit and the susceptible
   equipment into different branch circuit. Consult your
   dealer.

Table of Contents

About This Manual

This manual is divided into four chapters. This section explains the organization of this manual.

Introduction
Describes the features of the monochrome video graphic printer.

Operation
Describes actual printing **once all connections and adjustments have been made,** as explained in the next chapter. You will be able to make printout variations after reading through this chapter.

Connection and adjustment
Describes how to make connections and make adjustments using the menus displayed in the printer window display. Once all connections and adjustments have been made, there should be no need to perform these operations again during normal printing operations. These operations must, however, be performed after reinstalling, or if the picture quality degrades, or if adjustment becomes necessary.

Others
Notes the precautions to be observed when using the printer, lists errors and their handling, and explains troubleshooting. Also provided is information on the locations and functions of parts and controls.

Conventions used

Cross reference
Throughout this manual you will find the references to other sections of the manual that contains related information.

Important note
Be sure to read the sections of the manual marked Note . They explain points that you should be aware of to operate the printer correctly and prevent malfunctions.

Overview

The UP-980/980CE is a monochrome video graphic printer that reproduces images from video equipment. Large size pictures can be printed out quickly and easily using the following features:

Clear and stable print quality
• 256 gradations of black and white.
• Stable printouts using the temperature compensation technology

Various printout modes

Single picture mode

Side mode
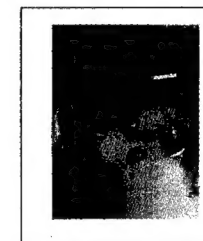
Reverse mode
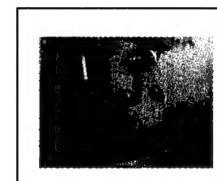
Multi-picture mode
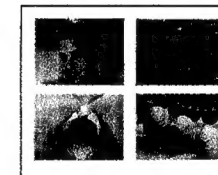
In addition to the above variations, you can make variety of printouts by changing menu settings of the printer.

Multiscan capability
• You can use a color composite video signal (NTSC/PAL compatible), a black and white video signal (EIA/CCIR compatible), or a 31.5 kHz high scan signal (horizontal scanning frequency) as the input signal.
• In the auto scan mode, the printer automatically sets the print area according to the type of the input signal.

Saving/loading printer specifications
You can put up to three kinds of printer settings made on menus into memory and load any one of the three. The printer operates based on the loaded settings.

Auto-cut function
The paper is automatically cut when printing is finished.

Various types of paper
• The UPP-210HD High Density Printing Paper produces a high density printouts.
• The UPT-210BL Blue Thermal Transparent Film allows you to print images on transparent film.

Loading Paper

- Do not fold the paper or touch the printing surface. Any dust on the printing surface will result in poor printing quality.
- Use only paper made specially for the UP-980 series (page 97).
- Select the paper type from the PICTURE menu (page 76).

1 Press the power ON/OFF switch to turn on the printer.
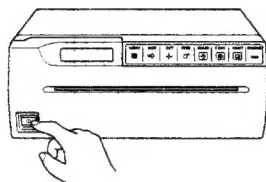
The following message appears on the printer window display.

```
UP-980
        BY SONY
```

2 Press the OPEN/CLOSE button to open the door panel.
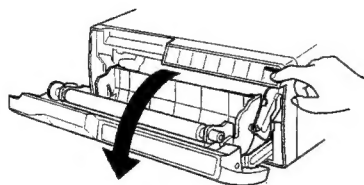
3 Place the paper roll in the printer.

When the UPP-210SE/210HD is used:

Place the paper with the thermo-sensitive side (printing side) facing up.
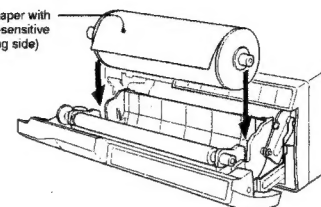
When the UPT-210BL is used:

Place the paper with the thermo-sensitive side (printing side) facing up.
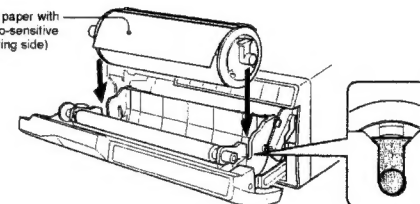
4 Insert the end of the paper into the paper insertion slot manually and feed the paper until its end comes out from the paper outlet.
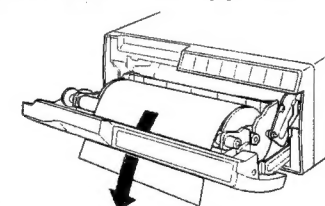
Note
Be sure to remove any slack in the roll when pulling out the paper or film.
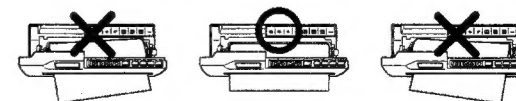
Loading Paper (Continued)

5 Press the OPEN/CLOSE button to close the door panel.
You can also close the paper lid by simply pushing it.

Note

After loading the paper roll or film, press and hold down the FEED button until 15 to 20 cm (6 to 7¾ inches) of the paper protrudes, then press the CUT button to cut the paper.

FEED button

CUT bnutton

15 to 20 cm
(6 to 7¾ inches)
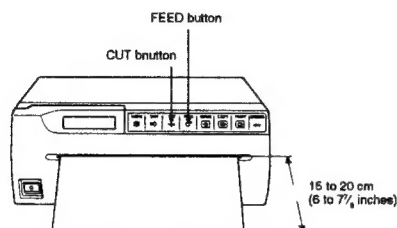
Making Printouts

This section explains the basic printing operation in the auto scan mode. In this mode, the printer automatically sets the print area according to the type of the input signal. As a result, the best possible printouts can be obtained simply by pressing the PRINT button or COPY button.
The printer provides the following two print modes.
• Single picture mode
  A full-size image is printed on one page.
• Multi picture mode
  Multiple reduced-images are printed on one page.

Before making a full-size printout
• Are the connections correct? (page 73)
• Is the auto scan mode set to ON? (page 87)
• Is the auto cut mode set to ON? (page 86)
  You can set the desired amount of the paper to be fed in the auto feed mode (page 80).
• Is the paper roll or film loaded properly? (page 58)
• Is the paper type set correctly? (page 76)
• Is the printer set to import one image into its memory (single picture mode)? (page 81)

OPEN/CLOSE button

COPY button
FEED button
CUT button

1   **3**
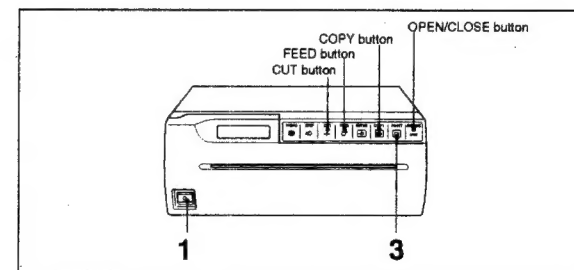
1 Press the power ON/OFF switch to turn on the printer.
All buttons except CAPTURE button on the front panel will light.

2 Start the video source.
This is done using the controls on the source video equipment.

Continue to next page →

Making Printouts (Continued)

3 When the image you want to print appears on the video monitor, press the
PRINT button.
The image displayed at the instant you press the PRINT button.
is captured into memory and is printed out immediately.

```
PRINTING
Q1
```

Notes
- In the single picture mode, the CAPTURE button is deactivated.
- In the auto cut mode, remove the paper immediately after printing is completed.
  If the cut paper covers the paper outlet, jamming may occur.

To make multiple copies of identical printouts
You can make up to 10 identical printouts.
Set the desired number of copies on the PRINT QTY sub menu of the PRINTER
main menu. (See page 83.)
The printer makes the chosen number of identical printouts when the PRINT button
is pressed.

To copy the last printout again
The image of the last printout is retained in the printer's memory until you press the
PRINT button again or turn the power off.
You can make printouts of this image as many times as you like by pressing the
COPY button.
If you require multiple copies, set the desired number on the PRINT QTY sub
menu and press the COPY button.

To interrupt printing
Press one of the FEED, the CUT or the OPEN/CLOSE button while printing or
while copying. The printer stops printing.

To stop printing and print another picture displayed on the video
monitor
To do this, the INTERRUPT of the INTERRUPT sub menu of the PRINTER main
menu must be set to ON. (See page 84.)
Press the PRINT button while printing or copying. The printer stops printing,
captures the image displayed at the instant you press the PRINT button, and starts
printing the new image.

Note
If you press the COPY button immediately after turning the power on, an alarm
buzzer will sound as nothing is stored in the memory.

If the printout image is blurred
A rapidly moving image may be blurred when printed. Should this occur, change
MEMORY to FIELD on the MEMORY sub menu of the PICTURE main menu.
(See page 77.)

If the brightness and/or contrast of printouts is unsatisfied
You can adjust the brightness and contrast of printouts using the BRIGHTNESS
sub menu and the CONTRAST sub menu.
Pressing the BRIGHT button on the sub panel results in accessing the
BRIGHTNESS sub menu easily. (See page 78.)
Pressing the CONTRAST button on the sub panel results in accessing the
CONTRAST sub menu easily. (See page 78.)

Remotely controlling the printer

You can remotely control the printer using the RM-91 remote control unit or the
FS-20 foot switch.

Since the button on the remote control unit or foot switch functions exactly same as
the PRINT button, pressing either of them results in an image being captured and
immediately printed in single picture mode.

If INTERRUPT is set to ON on the INTERRUPT sub menu of the PRINTER main
menu (see page 84), pressing the switch on the remote control unit or foot switch
during printing causes the printer to stop, capture the image now displayed and
start printing of new image.

Making Printouts (Continued)

In the multi picture mode, 2, 4 or 6 reduced images are printed on one page.

Selecting number of images to be captured in memory

The number of images printed on one page depends on the number of images set on the MULTI PICTURE sub menu.
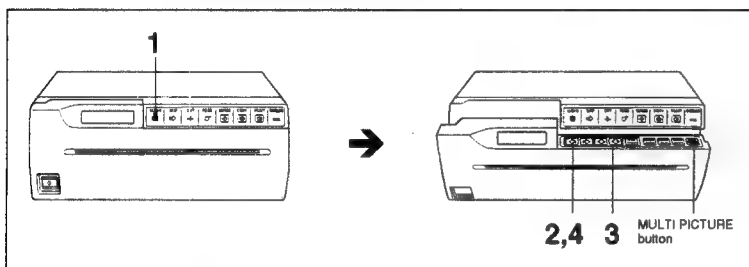
1

2,4 3 MULTI PICTURE
button

1 Press the MENU button.
The door panel opens slightly and the sub panel appears.
The main menu appears in the printer window display.

```
MENU
*PICTURE/LAY/PRT
```

2 Display the LAYOUT menu by pressing the ⇦ or ⇨ button.

```
MENU
PIC/*LAYOUT/PRT
```

3 Display the MULTI PICTURE sub menu by pressing the ⇧ or ⇩ button.

```
MULTIPICTURE
 *1/  2/  4/  6
```

4 Select the desired number of reduced images printed on one page by pressing the ⇦ or ⇨ button.

Displayed number	Number of reduced images
1	1 (full-size)
2	2 (two-reduced images)
4	4 (four-reduced images)
6	6 (six-reduced images)

To return to the regular window display
Press the MENU button to return to the main menu. Then press the MENU button again. The door panel closes and the printer window display returns to the regular display.
Or press the OPEN/CLOSE button. The door panel closes and the printer window display returns to the regular display.

Note
When the printer enters in the multi picture mode, the PRINT button will go off and the CAPTURE button will lights.

To access the MULTI PICTURE sub menu easily
In step 1, the door panel opens slightly and the sub panel appears. Press the MULTI PICTURE button on the sub panel. The MULTI PICTURE sub menu appears.

Image border colors
You can set the border color to either white or black using the FRAME COLOR sub menu. (See page 80.)

Making Printouts (Continued)

Printing multiple images on one page

Before making a printout with multiple images
- Are the connections correct? (page 73)
- Is the auto scan mode set to ON? (page 87)
- Is the auto cut mode set to ON? (page 86)
  You can set the desired amount of the paper to be fed in the auto feed mode (page 80).
- Is the paper roll or film loaded properly? (page 58)
- Is the paper type set correctly? (page 76)
- Is the printer set to capture multiple reduced images (multi picture mode)? (page 64)

2 4

SKIP button

CUT button   OPEN/CLOSE button
FEED button
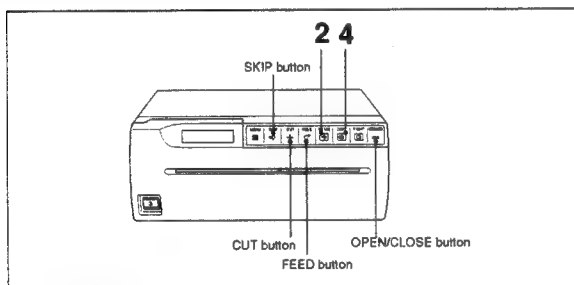
1 Start the video source.
This is done using the controls on the source video equipment.
On the printer window display, the following is displayed.

Setting of IMAGE SIZE
(In this case, STANDARD
mode is selected)

Underline: Indicates the position at which the cursor is placed. A new image will be captured at this position.

```
TYPE2          12
Q1      STD6   34↓
```

Type of multi picture printer mode
(in this case, mode to make a
printout with six reduced images)

Indicates that there is the next
page.

When SIDE of IMAGE SIZE is selected, the printer window display is as follows.

```
TYPE2          135
Q1      SIDE6   246
```

2 When the image you want to print appears on the video monitor, press the CAPTURE button.
The image is captured at the position where the cursor was placed in step 1.
The cursor then moves to the next position.

3 Repeat step 2 until you have captured all the desired images.

To replace a captured image
To change the image stored at the third position in an example:

① Move the cursor to the third image position by using the SKIP button.

```
TYPE2          12
Q1      STD6   34↓
```

Move the cursor to this position.

② Press the CAPTURE button when the new image you want to print appears.
The previously stored image is replaced with the newly captured image.

4 Press the COPY button.
All images captured in memory are printed on one page.

Notes
- In the multi picture mode, the PRINT button is not activated.
- In the auto cut mode, remove the paper immediately after printing is completed. If the cut paper covers the paper outlet, jamming may occur.

To automatically start printing after all images are captured in memory
You can make a printout without pressing the COPY button. To do this, set AUTO PRINT to ON on the AUTO PRINT sub menu of the PRINTER main menu. (See page 87.)

To make multiple copies of identical printouts
You can make up to 10 identical printouts.
Set the desired number of copies on the PRINT QTY sub menu of the PRINTER main menu. (See page 83.)

To copy the last printout again
You can make printouts of these reduced-images as many times as you like by pressing the COPY button.
The printer makes the number (chosen on the PRINT QTY menu) of identical printouts when the COPY button is pressed.

Making Printouts (Continued)

To interrupt printing

Press one of the FEED, the CUT or the OPEN/CLOSE button while printing or while copying. The printer stops printing.

Note

If you press the COPY button immediately after turning the power on, an alarm buzzer will sound as nothing is stored in the memory.

To stop printing and capture another image displayed on the video monitor

To do this, the INTERRUPT of the INTERRUPT sub menu of the PRINTER main menu must be set to ON. (See page 84.)
Press the CAPTURE button while printing or copying. The printer stops printing, captures the new image and positions it where the cursor is placed. Press the COPY button again to make a printout.

If the printout image is blurred

A rapidly moving image may be blurred when printed. Should this occur, change the MEMORY to FIELD on the MEMORY sub menu of the PICTURE main menu. (See page 77.)

If the brightness and/or contrast of printouts is unsatisfied

You can adjust the brightness and contrast of printouts using the BRIGHTNESS sub menu and the CONTRAST sub menu.
Pressing the BRIGHT button on the sub panel results in accessing the BRIGHTNESS sub menu easily. (See page 78.)
Pressing the CONTRAST button on the sub panel results in accessing the CONTRAST sub menu easily. (See page 78.)

Remotely controlling the printer

You can remotely control the printer using the RM-91 remote control unit or the FS-20 foot switch.

Since the button on the remote control unit or foot switch functions exactly same as the CAPTURE button, pressing either of them results in an image being captured. When all the reduced images (the number chosen on the MULTI PICTURE sub menu) have been captured and they are automatically printed in one page.

If AUTO PRINT is set to ON on the AUTO PRINT sub menu of the PRINTER main menu (see page 87), pressing the switch on the remote control unit or foot switch during printing causes the printer to stop, capture the image now displayed and position it where the cursor is placed. If the cursor has been placed at the last position, the printer automatically starts printing.

Clearing all images stored in memory

You can clear all the images in memory at one time.
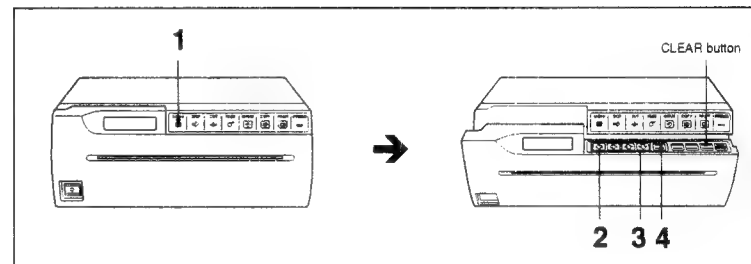
1 Press the MENU button.
The door panel opens slightly and the sub panel appears.
The main menu appears in the printer window display.

2 Display the PRINTER menu by pressing the ◁ or ▷ button.

```
MENU
PIC/LAY/✱PRINTER
```

3 Display the CLEAR sub menu by pressing the ⇧ or ⇩ button.

```
CLEAR
        <EXEC>
```

4 Press the EXEC button.
All images in memory are cleared.

To return to the regular window display

Press the MENU button to return to the main menu. Then press the MENU button again. The door panel closes and the printer window display returns to the regular display.
Or press the OPEN/CLOSE button. The door panel closes and the printer window display returns to the regular display.

To access the CLEAR sub menu easily

In step 1, the door panel opens slightly and the sub panel appears. Press the CLEAR button on the sub panel. The CLEAR sub menu appears.

Making Printouts (Continued)

In both single picture and multi picture modes, you can make variety of printouts by changing IMAGE SIZE on the IMAGE SEIZE sub menu and setting the number of images to be printed on one page. (pages 79 and 81)

STANDARD mode

Full-size

Printing direction

2 reduced images on one page

4 reduced images on one page

6 reduced images on one page

SIDE mode

Full-size

2 reduced images on one page

4 reduced images on one page

6 reduced images on one page
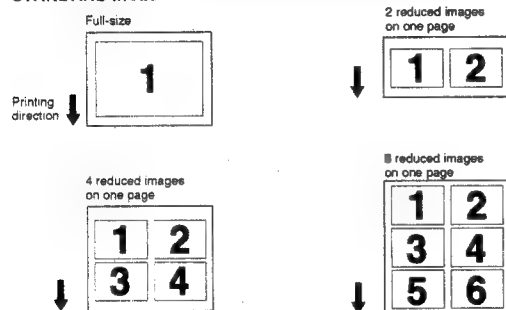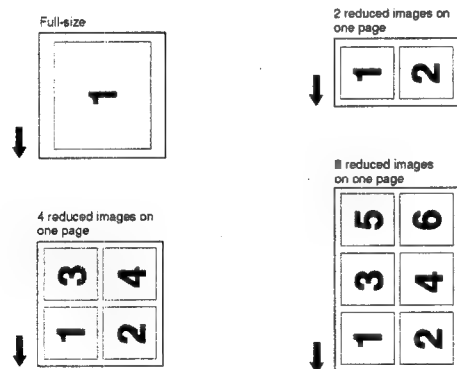
In addition to the above variations, you can make printouts upside down (see page 80) and mirror image printouts (see page 81).

In the auto cut mode, the paper is automatically cut each time the printing is completed. However, if you want to print several pictures without cutting the paper, you can cut the paper at any position desired.
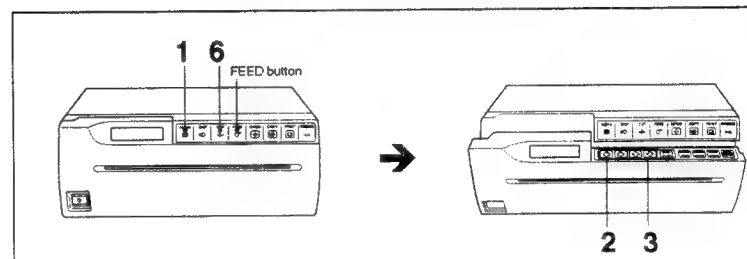
1 Press the MENU button.
The door panel opens slightly and the sub panel appears.
The main menu appears in the printer window display.

2 Display the PRINTER menu by pressing the ⬦ or ⬦ button.

3 Display the AUTO CUT sub menu by pressing the ⬦ or ⬦ button.

```
AUTO CUT
      *ON/    OFF
```

4 Set AUTO CUT to OFF on the AUTO CUT sub menu of the PRINTER main menu

```
AUTO CUT
       ON/   *OFF
```

The printer enters in the auto-cut off mode. The printer is in this mode until you change the auto cut mode setting.

5 Start printing.
Press the PRINT button to print the image or press the COPY button to print images stored in memory, and make the desired number of printouts.

Making Printouts (Continued)

6 Press the CUT button.
The paper is cut.

To add a margin
Before you press the CUT button in step 6, press and hold down the FEED button until the paper is fed out to the desired margin.
You can set a margin using the AUTO FEED sub menu. (See page 80.)

Note
Use the FEED button to feed the paper. Pulling on the paper without using the FEED button may result in mechanical problems.

Connection

Notes
• Turn off the power to each device before making connection.
• Connect the AC power cord last.
• Before making connections, see "Important safeguards/notices for use in the medical environment" on page 54.

UP-980/980CE
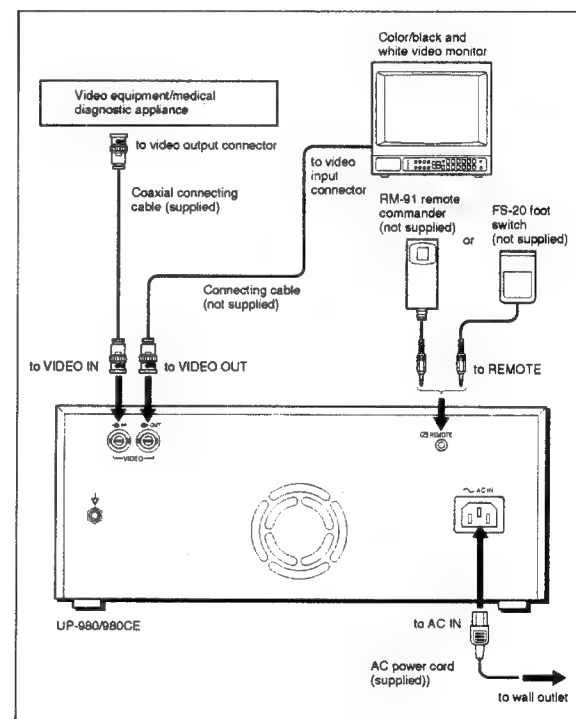
Setting Up the Printer

You can input the printer specifications. Once these have been determined and stored, settings remain even if the printer is turned off. The printer will operate according to the settings until they are modified. This means that you can set up the printer for specific purposes, or according to the connected equipment or individual preferences.

There are three types of main menus and each main menu has multiple sub menus (in this manual, they are also called items).

Detailed information on each sub menu is described at the top of each main menu.

Menu operation buttons
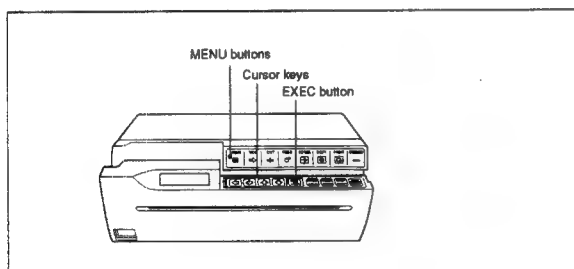
The functions of the menu operation buttons are described below.

Button	Function
MENU	The door panel opens slightly and the sub panel appears by pressing this button. The top level of the menu (main menu level) is displayed in the printer window display. To return to the top level of the menu from a sub menu, press this button. When the top level of the menu (main menu) is displayed, pressing this button results in closing the door panel.
⬦	Selects the sub menu Selects the sub menu upward.
⬦	Selects the sub menu downward.
⬦	Selects the desired selection. Decreases the set or adjusted value.
⬦	Selects the desired selection. Increase the set or adjusted value.
EXEC	Executes the selected setting in the special sub menus (LOAD, SAVE, CLEAR, INITIALIZE and SCAN INPUT sub menus only).

Menu operation procedure
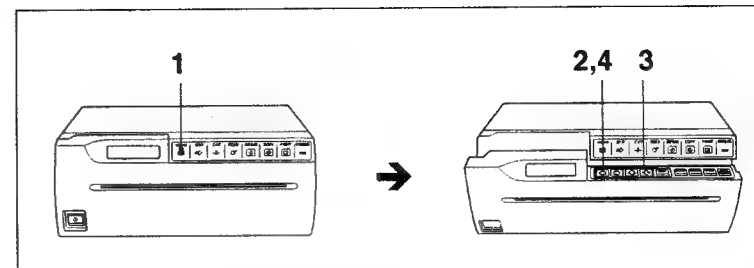
1 Press the MENU button.
The door panel opens slightly and the sub panel appears.
The main menu appears in the printer window display.

```
MENU
✳PICTURE/LAY/PRT
```

2 Display the desired main menu by pressing the ⬦ or ⬦ button.

3 Display the desired sub menu by pressing the ⬦ or ⬦ button.

4 Select the desired selection or change the value by pressing the ⬦ or ⬦ button.

To return to the regular window display

Press the MENU button to return to the main menu. Then press the MENU button again. The door panel closes and the printer window display returns to the regular display.
Or press the OPEN/CLOSE button. The door panel closes and the printer window display returns to the regular display.

Note

If you turn off the printer power with the door panel opened after you have changed the menu settings, those modified settings will become invalid. To execute and retain the menu settings, return to the regular window display by closing the door panel.

Setting Up the Printer (Continued)

The PICTURE main menu consists of the following sub menus. These sub menus allow you to adjust the printouts and select the paper type.

PICTURE menu

```
MENU
 *PICTURE/LAY/PRT
```

Sub menu (item)	Contents of functions	Factory setting	Ref. page
PAPER TYPE	Selects the paper type.	2	76
GAMMA CURVE	Sets the desired printing tone.	1	76
IMAGE	Sets the printout to either positive printout or negative printout.	POSI	77
SHARPNESS	Obtains greater printout sharpness.	OFF	77
MEMORY	Selects either frame mode or field mode.	FRAME	77
BRIGHTNESS	Adjusts the printout brightness.	0	78
CONTRAST	Adjust the printout contrast.	0	78

PAPER TYPE

```
PAPER TYPE
 TYPE   *2/    3
```

Selects the type of printing paper to be used.
TYPE 2: Thermal paper UPP-210SE/210HD
TYPE 3: Thermal film UPT-210BL
For details on the printing paper, see page 97.

GAMMA CURVE

```
GAMMA CURVE
 TONE  *1/   2/   3
```

Sets the printing tone to one of TONE 1, TONE 2 or TONE 3.

The diagram below shows the curve of each tone for your reference.
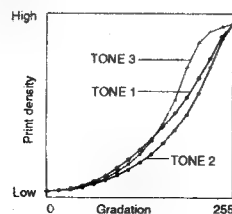
IMAGE

```
IMAGE
 *POSI/    NEGA
```

Selects either positive or negative printouts.
POSI: Normally make printouts using this setting.
NEGA: To make negative printouts, select NEGA.

SHARPNESS

```
SHARPNESS
       ON/   *OFF
```

Adjusts the printout sharpness.
ON: Obtains greater sharpness.
OFF: Normally make printouts using this setting.

Note
SHARPNESS is effective only when the color (NTSC or PAL) or black and white (EIA or CCIR) video signal is input.

MEMORY

```
MEMORY
 *FRAME/    FIELD
```

Sets the memory mode.
FRAME: Normally make printouts using this setting.
FIELD: When printing fast-moving pictures (such as a ball being thrown), the printout may blur. If this happens, use FIELD. The printout definition will be poorer, but less blurred.

Note
MEMORY is effective only when the interlace signal is input.

Setting Up the Printer (Continued)

BRIGHTNESS/CONTRAST

BRIGHTNESS sub menu

```
BRIGHTNESS:      0
--------X---------
```

CONTRAST sub menu

```
CONTRAST         0
--------X---------
```

Both brightness and contrast settings are divided into 15 steps from -7 to +8.

BRIGHTNESS: Adjusts the brightness of the printouts.
The printout becomes brighter in the + direction by pressing the ⇨ button.
The printout becomes darker in the - direction by pressing the ⇦ button.

CONTRAST: Adjusts the contrast of the printout.
The contrast is increased in the + direction by pressing the ⇨ button.
The contrast is decreased in the - direction by pressing the ⇦ button.

Note
You cannot adjust the image once it has been captured in memory. Restore an image after adjustment.

Displaying the BRIGHTNESS/CONTRAST sub menus easily
Press the BRIGHT button on the sub panel to display the BRIGHTNESS sub menu easily and CONTRAST button to display the CONTRAST sub menu. (See pages 63 and 68.)

The LAYOUT main menu consists of the following sub menus. These sub menus allow you to adjust the printout size, printout area, and set printer operation functions frequently used in daily operations.

LAYOUT menu

```
MENU
PIC/XLAYOUT/PRT
```

Sub menu (item)	Contents of functions	Factory setting	Ref. page
IMAGE SIZE	Selects the printing direction in the vertical or horizontal direction.	STANDARD	79
AUTO FEED	Sets the amount of paper to be fed out in the auto cut mode.	0	80
FRAME COLOR	Selects the border color in the multi picture mode	WHITE	80
DIRECTION	Selects the printing direction from bottom or top.	NORMAL	80
MIRROR	Selects whether to rotate the image around its vertical axis when printing.	OFF	81
MULTIPICTURE	Sets the number of images to be printed on one page.	1	81
ASPECT	Selects the aspect ratio.	4:3	81
ASPECT ADJUST	Adjusts the selected aspect ratio.	00	82
H-SHIFT	Specifies the horizontal shift.	194 [1] 194 [2]	82
H-SIZE	Specifies the horizontal size	1200 [1] 1200 [2]	82
V-SHIFT	Specifies the vertical shift.	22 [1] 30 [2]	82
V-SIZE	Specifies the vertical size.	478 [1] 570 [2]	82

1) When the NTSC or EIA video signal is input:
2) When the PAL or CCIR video signal is input:

IMAGE SIZE

```
IMAGE SIZE
XSTANDARD/    SIDE
```

Selects the vertical or horizontal printing direction.
STANDARD: Prints in the vertical direction.
SIDE: Prints in the horizontal direction.
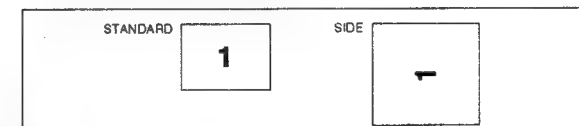
Note
When you change the IMAGE SIZE setting, MULTIPICTURE is reset to 1 (in the single picture mode) if 2, 4 or 6 is selected on the MULTIPICTURE sub menu (in the multi picture mode).

Setting Up the Printer (Continued)

AUTO FEED

```
┌─────────────────────────┐
│ AUTO FEED        0       │
│ ✳------+--------         │
└─────────────────────────┘
```

Sets the margin at the top and bottom of the printout. Used to set the paper size after printing.

The margin can be set in 15 steps from 0 to +15. One step corresponds to a 5 mm margin. Thus, up to 75 mm margin can be added to the top and bottom of the printout.

The amount of paper to be fed out is shortened by pressing the ⇔ button.
The amount of paper to be fed out lengthened by pressing the ⇔ button.

FRAME COLOR

```
┌─────────────────────────┐
│ FRAME COLOR             │
│    BLACK/ ✳WHITE        │
└─────────────────────────┘
```

Selects the border color of the reduced images in the multi picture mode.
BLACK: The border color is black.
WHITE: The border color is white.

DIRECTION

```
┌─────────────────────────┐
│ DIRECTION               │
│ ✳NORMAL/ REVERSE        │
└─────────────────────────┘
```

Selects whether the top or the bottom of the screen is to be printed first.
NORMAL: Normally make printouts using this setting. Printing is done from the bottom of the screen.
REVERSE: Starts printing from the top of the screen.
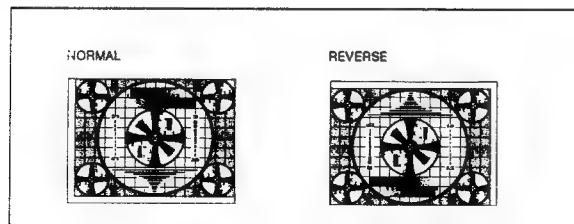
MIRROR

```
┌─────────────────────────┐
│ MIRROR                  │
│       ON/ ✳OFF          │
└─────────────────────────┘
```

Used to make a mirror image printout (the stored image is rotated around its vertical axis when printed).
OFF: Normally make printouts using this setting.
ON: Prints mirror image.

MULTIPICTURE

```
┌─────────────────────────┐
│ MULTIPICTURE            │
│ ✳1/  2/  4/  6          │
└─────────────────────────┘
```

Sets the number of images to be printed on one page.

Item	Number of images
1	1 [1]
2	2 [2]
4	4 [2]
6	6 [2]

1) The mode, where one full-size image is printed on one page, is called the single picture mode in this manual.
2) The mode, where multiple reduced images are printed on one page, is called the multiple picture mode in this manual.

Displaying the MULTIPICTURE sub menu easily
Press the MULTIPICTURE button on the sub panel.

ASPECT

```
┌─────────────────────────┐
│ ASPECT                  │
│    ✳4:3 /   1:1         │
└─────────────────────────┘
```

Selects the aspect ratio.
4 : 3: Normally make printouts using this setting.
1: 1: When the aspect ratio of the video signal is 1:1, set to 1:1.
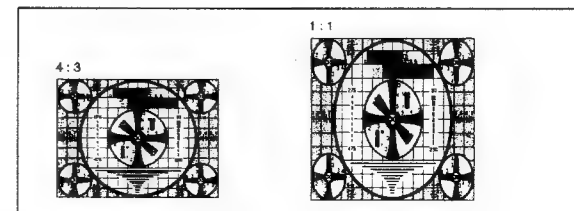
Setting Up the Printer (Continued)

ASPECT ADJUST

```
ASPECT ADJUST
           00
```

Makes fine adjustment to the selected aspect ratio.
To make a printout wider, increase the value by pressing the ⇨ button.
To make a printout taller, decrease the value by pressing the ⇦ button.

H-SHIFT/H-SIZE/V-SHIFT/V-SIZE
H-SHIFT sub menu

```
H-SHIFT:
      194dots
```

H-SIZE sub menu

```
H SIZE:
     1200dots
```

V-SHIFT sub menu

```
V SHIFT:
       22lines
```

V-SIZE sub menu

```
V-SIZE:
      478lines
```

In the AUTO SCAN mode, the printer automatically adjusts the printout size according to the input signals. However, a satisfactory printout may not be obtained even with this mode activated. There may be missing portions or black borders appearing on printouts. In such a case, you can make fine adjustments using the H-SHIFT, H-SIZE, V-SHIFT and V-SIZE sub menus of the LAYOUT menu.
For detailed information, see "Adjusting the Printout Size" on page 88.

The PRINTER main menu consists of the following sub menus. These sub menus allow you to set the printer operation functions and specifications.

PRINT menu

```
MENU
PIC/LAY/✳PRINTER
```

Sub menus (item)	Contents of functions	Factory setting	Ref. page
PRINT QTY	Sets the number of printouts.	1	83
LOAD	Loads the saved settings.	1	84
SAVE	Saves all menu settings	1	84
INITIALIZE	Resets all settings currently loaded to the factory settings.	—	84
INTERRUPT	Enables an image to be captured while printing.	OFF	84
BEEP	Selects whether the operation and error tones sound.	ON	85
LCD CONTRAST	Adjusts the contrast of the printer window display.	0	85
AGC	Adjusts the input signal level.	OFF	85
TRAP FILTER	Sets the trap filter to ON or OFF.	OFF	85
75 ohm	Sets the 75-ohm termination to ON or OFF.	ON	86
CLEAR	Clears the images stored in memory.	—	86
AUTO CUT	Selects whether the paper is cut automatically after printing.	ON	86
AUTO PRINT	Selects whether the printer starts printing automatically in the multi picture mode.	OFF	87
AUTO SCAN	Sets the printer to the auto scan mode.	O	87
SCAN INPUT	Sets the printer in the auto scan mode temporarily for the current input signal when AUTO SCAN is set to OFF.	—	87
PIXEL DENSITY	Selects the line density.	STANDARD	87

PRINT QTY

```
PRINT QTY
          Q1
```

Sets the number of printouts. You can set any number up to 10.

Setting Up the Printer (Continued)

LOAD/SAVE

LOAD sub menu

```
LOAD      <EXEC>
  *1 /   2 /   3
```

SAVE sub menu

```
SAVE      <EXEC>
  *1 /   2 /   3
```

You can save up to three settings. These settings are managed according to the LOAD number. You can load only on setting at a time.
For details, see "Saving the Menu Settings" on page 92.

INITIALIZE

```
INITIALIZE
        <EXEC>
```

Resets the currently adjusted settings to the factory setting values.
To initialize, press the EXEC button.

INTERRUPT

```
INTERRUPT
     ON/   *OFF
```

Sets whether the PRINT and CAPTURE buttons are activated to enable interruption of the printing process and capture an image in memory.
Printer operation differs between the single picture and multi picture modes.
In the single picture mode:
ON: By pressing the PRINT button while printing, the printer stops printing, captures the image displayed, and starts printing immediately.
OFF: Even if you press the PRINT button, the printer continues printing without stopping.
In the multi picture mode:
ON: By pressing the CAPTURE button while printing, the printer stops printing, captures the new image and displays it at the position where the cursor has been placed.
OFF: Even if you press the CAPTURE button, the printer continues printing without stopping.

When remotely controlling the printer
The button on the remote control unit or foot switch functions exactly same as the PRINT button and CAPTURE button.
For details, see pages 63 and 68.

BEEP

```
BEEP
     *ON/   OFF
```

Selects whether the operation and error tones sound whenever you press a button.
ON: Enables the tones.
OFF: Disables the tones.

LCD CONTRAST

```
LCD CONTRAST   0
-------*--------
```

Adjusts the contrast of the printer window display.
The number decreases and the contrast weakens by pressing the ⬅ button.
The number increases and the contrast strengthens by pressing the ➡ buttons.

AGC (Automatic gain control)

```
AGC
      ON/   *OFF
```

Adjusts the input signal to the optimum printing level.
OFF: Normally make printouts using this setting (when the proper signal is input).
ON: When the printout image appears blackish or whitish, select this position to adjust the input signal to the optimum level.

> **Note**
> AGC is effective only when the color (NTSC or PAL) or black and white (EIA or CCIR) video signal is input.

TRAP FILTER

```
TRAP FILTER
      ON/   *OFF
```

Sets the trap filter to ON or OFF in accordance with the input signal.
ON: When the input signal to be printed is in color.
OFF: When the input signal to be printed is in black and white.

> **Note**
> TRAP FILTER is effective only when the color (NTSC or PAL) or black and white (EIA or CCIR) video signal is input.

Setting Up the Printer (Continued)

75 ohm

```
┌─────────────────────────┐
│ 75ohm                   │
│         ✷ON/    OFF     │
└─────────────────────────┘
```

Selects whether the printer is terminated with 75-ohm impedance.
ON: When no equipment is connected to the VIDEO OUT connector of the printer.
OFF: When equipment such as a monitor or a VTR is connected to the VIDEO OUT connector of the printer.
When you connect two printers to one video equipment, set the 75 ohm sub menu of one of the printer to ON, and the other to OFF.

CLEAR

```
┌─────────────────────────┐
│ CLEAR                   │
│              <EXEC>     │
└─────────────────────────┘
```

Clears all the images stored in memory in the multi picture mode.
To clear the images, press the EXEC button.

Display the CLEAR sub menu easily
Press the CLEAR button on the sub panel. (See page 69.)

AUTO CUT

```
┌─────────────────────────┐
│ AUTO CUT                │
│         ✷ON/    OFF     │
└─────────────────────────┘
```

Sets the printer to the auto cut mode. The paper is automatically cut when printing is completed.
ON: Sets the printer to auto cut mode.
OFF: The paper should be cut manually by using the CUT button. Using this mode, you can save paper and make more printouts per roll of paper.

AUTO PRINT

```
┌─────────────────────────┐
│ AUTO PRINT              │
│         ON/   ✷OFF      │
└─────────────────────────┘
```

Selects whether the printer starts printing automatically in the multi picture mode.
ON: When the determined number of images have been captured, the printer starts printing automatically without the COPY button being pressed.
OFF: You have to press the COPY to start printing in the multi picture mode.

AUTO SCAN

```
┌─────────────────────────┐
│ AUTO SCAN               │
│         ✷ON/    OFF     │
└─────────────────────────┘
```

Selects the auto scan mode.
ON: Selects the auto scan mode. The printer adjusts the items related to printout size in accordance with the input signal.
OFF: When the AUTO SCAN mode is switched from ON to OFF, settings of items automatically adjusted in accordance with the input signal when AUTO SCAN was set to ON are retained. OFF is recommended when the signal that may not be correctly synchronized, such as the signal from VTR, is input.

SCAN INPUT

```
┌─────────────────────────┐
│ SCAN INPUT              │
│              <EXEC>     │
└─────────────────────────┘
```

When the EXEC button in this sub menu is pressed, the printer scans for the signal currently input and resets the following items to the factory settings for the scanned signal.
When you change the input signal, be sure to press the EXEC button in this sub menu.
Items reset to the factory settings: IMAGE SIZE, MULTI PICTURE, ASPECT ADJUST, H-SHIFT, H-SIZE, V-SHIFT and V-SIZE.

PIXEL DENSITY

```
┌─────────────────────────┐
│ PIXEL DENSITY           │
│ ✷STANDARD/    HIGH      │
└─────────────────────────┘
```

Selects the line density.
STANDARD: Normally make printouts using this setting.
HIGH: Sets the print line density to high density and obtains the better print quality. However, the printing speed is slower than in the STANDARD mode.

Setting Up the Printer (Continued)

In the auto scan mode, the printer automatically adjust the print area (printout size) according to the type of the input signal. With certain types of input signals, however, satisfactory printouts may not be obtained even with the auto scan mode activated. If there are missing portions or black borders on the printout, fine adjustments on the H-SHIFT, H-SIZE, V-SHIFT and V-SIZE sub menus are required.
This section explains the content of the adjustable items and how to adjust the printout size.

Adjustable Items

The following lists show the items you can adjust using the H-SHIFT, H-SIZE, V-SHIFT and V-SIZE sub menus.

Sub menu	Contents of adjustment
H-SHIFT	Specifies the horizontal shift.
H-SIZE	Specifies the horizontal size.
V-SHIFT	Specifies the vertical shift.
V-SIZE	Specifies the vertical size.

Relation between the print area and input image
The relation between the print area and input image is shown in the example below.

Input image   Print area (Printout size)
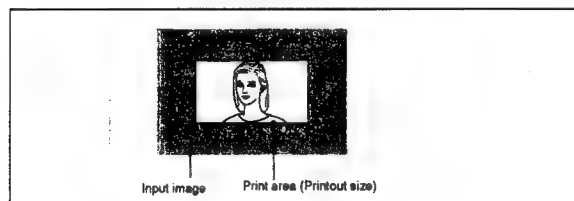
The relation between the print area and input image is automatically adjusted in auto scan mode. However, you can make fine adjustment if satisfactory printouts cannot be obtained.

Adjustment of the position relation between the print area and input image
You can adjust the position relation using the H-SHIFT and V-SHIFT sub menus.
H-SHIFT: Shifts the print area to the right or left in the input image.
V-SHIFT: Shifts the print area upwards or downwards in the input image.

Adjustment of the print area (printout size)
You can adjust the print area using the H-SIZE and V-SIZE menus.
H-SIZE: With the left edge remaining fixed, the print size is widened or narrowed.
V-SIZE: With top edge remaining fixed, the print area is enlarged downwards or reduced.

Adjusting the print area (printout size)

This subsection explains how to adjust the print area using the example.

Note
The values adjusted on each sub menu remain even if the printer is turned off.

The following examples of the printer window display indicate the values automatically adjusted in auto scan mode when the NTSC signal is input.

Adjustment on the H-SHIFT sub menu
Specifies the horizontal shift value in dots.
The following printer window display shows the value set in auto scan mode.

```
H-SHIFT:
      194dots
```

Example: When the left portion of the printout is missing with above setting; Reduce the H-SHIFT value.

Input image

Print area (Printout size)

Input image

Print area (Printout size)

```
H SHIFT:
      184dots
```

When the H-SHIFT value is set to 184 dots;

The print area shifts to the left by 10 dots.
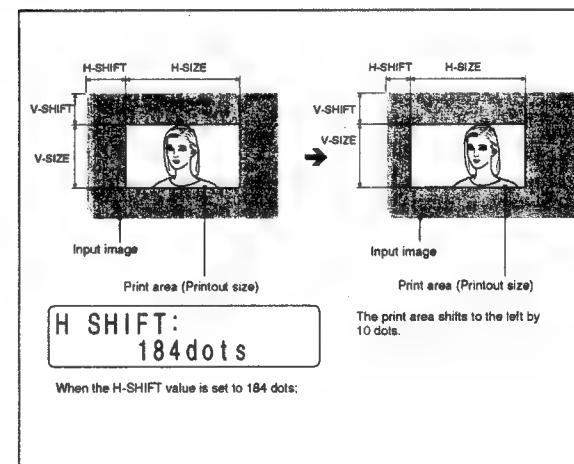
Adjustment on the H-SIZE sub menu

Specifies the horizontal size in dots.
The following printer window display shows the value set in auto scan mode.

```
H-SIZE:
     1200dots
```

Example: The horizontal size is too small with the above setting, and the right portion of the picture will be missing if the horizontal shift is adjusted.
Increase the H-SIZE value.

Input image

Print area (Printout size)

Input image

Print area (Printout size)

The print area is widened by 10 dots with the left edge remaining fixed.

```
H-SIZE:
     1210dots
```

When the H-SIZE value is set to 1210 dots;
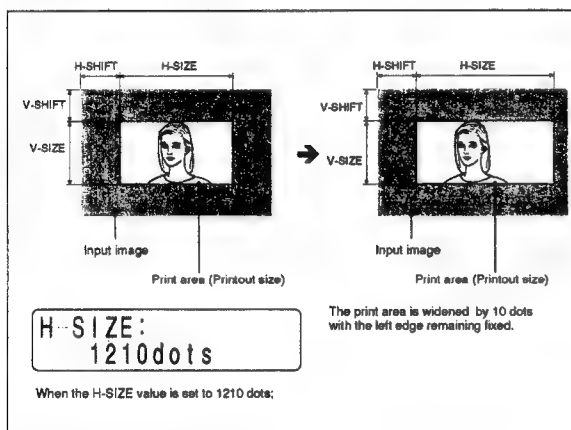
Adjustment on the V-SHIFT sub menu

Specifies the vertical shift value in lines.
The following printer window display shows the value set in auto scan mode.

```
V-SHIFT:
      22lines
```

Example: A black border appears on the lower part of the printout with the above setting.
Decrease the V-SHIFT value.

Input image

Print area (Printout size)

Input image

Print area (Printout size)

The print area shifts upward by 10 lines.

```
V-SHIFT:
      12lines
```

When the V-SHIFT value is set to 12 lines;
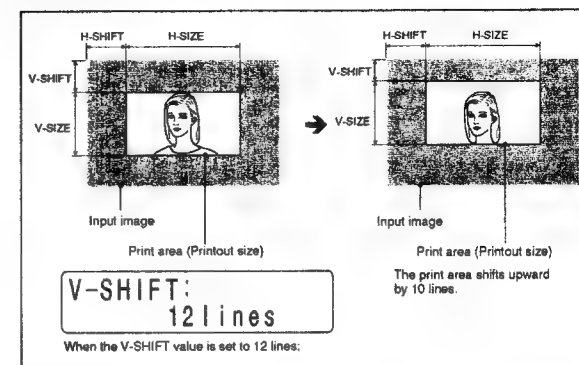
Adjustment on the V-SIZE sub menu

Specifies the vertical size in lines.
The following printer window display shows the value set in auto scan mode.

```
V-SIZE:
     478lines
```

Example: The vertical size is too large with the above setting, and a black border appears on the lower part of the printout.
Decrease the V-SIZE value.

Input image

Print area (Printout size)

Input image

Print area (Printout size)

The print area is reduced with the top edge remaining fixed by 10 lines.

```
V-SIZE:
     468lines
```

When the V-SIZE value is set to 488 lines;
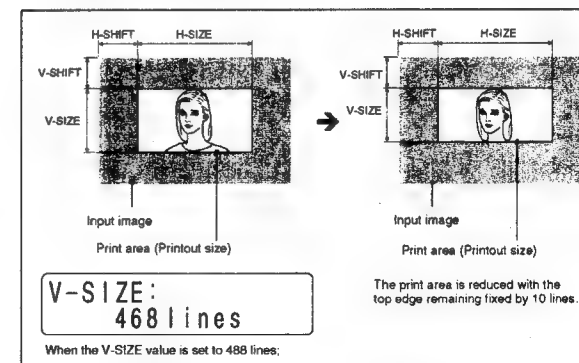
Setting Up the Printer (Continued)

You can save any settings you have made on all sub menus and load the desired settings. The printer operates according to the loaded settings.
You can modify the loaded settings and the printer will then operate according to the modified settings. These modified settings are retained even if the printer power is turned off.
Up to three different settings can be saved. All settings are retained even if the printer power is turned off.

Note
At the factory, factory setting values have been set to all of sub menus.
For the factory setting values, see "PICTURE Menu" on page 76, "LAYOUT Menu" on page 79 and "PRINTER Menu" on page 83.
For the H-SHIFT, H-SIZE, V-SHIFT and V-SIZE sub menus of the LAYOUT menu, factory settings for the NTSC color video signal and EIA black and white video signal have been set.

Saving the settings

Note
Be sure that all settings have been made.

1 Press the MENU button.
The door panel opens slightly and the sub panel appears.
The main menu appears in the printer window display.

2 Display the PRINTER menu by pressing the ⇦ or ⇨ button.

3 Display the SAVE sub menu by pressing the ⇧ or ⇩ button.

4 Select the desired SAVE number by pressing the ⇦ or ⇨ button.

5 Press the EXEC button.
The settings are saved with the SAVE number selected in step 4.

Loading the saved settings

The printer operates according to the loaded settings.

1 Press the MENU button.
The door panel opens slightly and the sub panel appears.
The main menu appears in the printer window display.

2 Display the PRINTER menu by pressing the ⇦ or ⇨ button.

3 Display the LOAD sub menu by pressing the ⇧ or ⇩ button.

4 Select the desired LOAD number by pressing the ⇦ or ⇨ button.

5 Press the EXEC button.
The settings with the LOAD number selected in step 4 are loaded.

To copy the settings made for one certain LOAD number to another SAVE number

1 Display the LOAD sub menu and select the LOAD number for which settings to be copied are stored by pressing the ⇦ or ⇨ button.

2 Press the EXEC button.

3 Display the SAVE sub menu and select the target SAVE number by pressing the ⇦ or ⇨ button.

4 Press the EXEC button.

To modify settings loaded in step 1 and save them
Modify the desired settings after step 2, then save the modified settings in step 3.

Precautions

On the safety

- Check the operating voltage before operation.
  Operate the unit only with a power source specified in the "Specifications".
- Stop operation immediately if any liquid or solid objects fall into the cabinet.
  Unplug the unit and have it checked by qualified personnel.
- Unplug the unit from a wall outlet if you will not be using it for a long time.
  Disconnect the power cord by grasping the plug. Never pull the cord itself.
- Do not disassemble the cabinet. Refer servicing to qualified personnel only.
- Keep fingers clear of the door panel when the the door panel is closing.
- Connect the power plug of the printer to a wall outlet that is safely grounded.

On operation

Do not turn the power off while the printer is printing. The thermal head may be damaged.

On printer carriage

Do not carry or move the printer when a paper roll is being placed in the printer;
Doing so may cause a malfunction.

On installation

- Place the printer on a level and stable surface during operation.
- Do not install the printer near heat sources. Avoid locations near radiators or air ducts. Also, do not place subject to direct sunlight or excessive dust, humidity, mechanical shock or vibration.
- Provide adequate air circulation to prevent heat buildup. Do not place the printer on surfaces such as rugs, blankets, etc., or near materials such as curtains and draperies.
- If the printer is subjected to wide and sudden changes in temperature, such as when it is moved from a cold room to a warm room or when it is left in a room with a heater that tends to produce large amounts of moisture, condensation may form inside the printer. In such cases the printer will probably not work properly, and may even develop a fault if you persist in using it. If moisture condensation forms, turn off the power and allow the printer to stand for at least one hour.

Precautions (Continued)

Cleaning the cabinet

Do not use strong solvents to clean the printer. Thinner or abrasive cleansers will damage the cabinet.

Cleaning the thermal head

If the printout is dirty or white stripes appear on the printouts, clean the thermal head using the supplied cleaning sheet.

1 Press the power ON/OFF switch to turn on the printer.
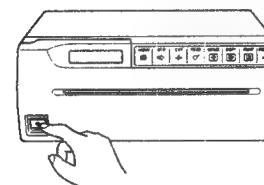
2 Press the OPEN/CLOSE button to open the door panel.
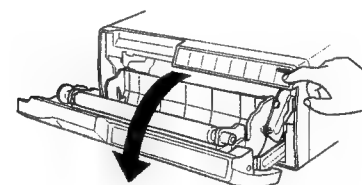
3 Place the cleaning sheet on the tray, and insert the end of the cleaning seat with the black surface facing down, into the paper insertion slot and feed the paper with your hands until the end comes out from the paper outlet.

Cleaning sheet (supplied)

Insert the cleaning sheet into the paper insertion slot.

2~3cm
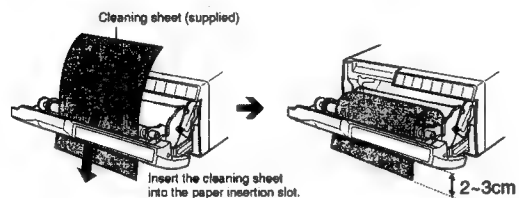
4 Press the OPEN/CLOSE button and keep it pressed.
The door panel closes and the printer starts cleaning the head.
When the buzzer sounds and the printer starts ejecting the cleaning sheet, release the OPEN/CLOSE button.
The following message is displayed while cleaning.

```
HEAD CLEANING
```

5 Press the OPEN/CLOSE button to open the door panel when the head cleaning is completed and the printer stops ejecting the cleaning sheet, then remove the cleaning sheet.

Notes
* Do not press the PRINT or COPY button while the cleaning sheet is in the printer.
* Clean the head only when necessary. If you clean the head too often, it may cause a malfunction.

Paper

Type of paper

* Use only paper specified for this printer. The use of other paper may result in reduced printer performance and poor print quality.
* The following types of paper are available.
  — UPP-210SE (Normal)
  — UPP-210HD (High density)
  — UPT-210BL (Thermal film)

* Before making a printout, make sure that the paper is suitable to your printer and set the paper type corresponding to your paper on the PAPER TYPE sub menu of the PICTURE main menu. (See page 76.)

Type of paper	Paper
TYPE 2	UPP-210SE/210HD
TYPE 3	UPT-210BL

Storing paper

* Store unused or printed paper or film in a cool, dark place (below 30°C or 86°F). We recommend that you store printed paper or film in a polypropylene pouch in the photo album.
* Do not store unused or printed paper or film in hot or humid place.
* Do not leave unused or printed paper or film in direct sunlight or other bright places for extended periods.
* Do not allow any volatile organic solvent or vinyl chloride to touch the printed paper or film. Alcohol, plastic tape or film will cause the printout to fade.
* To attach the printed paper to another piece of paper, use double-sided adhesive tape, or water-based or solid glue. (UPP-210SE/210HD only)
* Do not stack printed paper or film on or under a diazo copy sheet. The printout may become blackened.

Specifications

Thermal head
Thin-film thermal head (with built-in drive IC) 1280 dots
Gradation
256
Picture elements
EIA: 1280 × 506 dots
CCIR: 1280 × 610 dots
Print size (at factory setting)
STANDARD mode
EIA: 187 × 140 mm
CCIR: 187 × 138 mm
SIDE mode
EIA: 249 × 188 mm
CCIR: 249 × 186 mm
Printing speed
EIA: About 10 seconds/screen (aspect ratio 4:3)
CCIR: About 12 seconds/screen (aspect ratio 4:3)
Picture memory
2048 × 2048 × 8 bits
Input/output connectors
VIDEO IN (BNC)
• EIA or CCIR Composite video signals 1.0 Vp-p, 75 ohms/high-impedance switching (EIA/CCIR automatically discriminated)
• Hi-scan signal (31.5 kHz)
VIDEO OUT (BNC)
EIA or CCIR Composite video signals 1.0 Vp-p, 75 ohms, loop-through
REMOTE (stereo minijack)

```
        ⌐——o 3
        ———o 2
        ┘——o 1
```
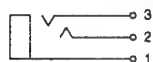
1 GND
2 PRINT SIGNAL (TTL)
When the LOW pulse over 100 msec is input, printing starts.
3 PRINT BUSY (TTL)
Goes HIGH during printing.

Power requirements and consumption
120 V AC, 50/60 Hz, 2.4 A
220 to 240 V AC, 50/60 Hz, 1.3 A
Operating temperature
5°C to 35°C (41°F to 95°F)
Operating humidity
20 % to 80 % (non condensation allowed)
Storage and transport temperature
-20°C to 60°C (-4°F to 140°F)
Storage and transport humidity
20 % to 90 % (non condensation allowed)
Dimensions
Approx. 316 × 132 × 305 mm (w/h/d)
(12½ × 5¼ × 12⅛ inches)
Mass
Approx. 8 kg (17 lb 10 oz), Main unit only
Supplied accessories
Paper roll (UPP-210HD) (1)
BNC - BNC connecting cable (1)
AC power cord (1)
Head cleaning sheet (1)
Instructions for Use (1)

Design and specifications are subject to change without notice.

Troubleshooting

The following troubleshooting checks will help you correct the most common problems you may encounter with your printer. Before proceeding with these trouble check, first check that the power cord is firmly connected. should the problem persist, unplug the printer and contact your Sony dealer or local authorized Sony service facility.

Symptom	Cause/remedy
White specks on first few printouts.	When printing with a newly inserted roll of paper, dust on the surface of the paper may cause white specks on the printouts. → Feed the paper by pressing the FEED button until clean paper appears, then cut by pressing the CUT button. (page 60)
Printing does not start when you press the PRINT or COPY button.	• Paper does not feed. → Is the paper slack? → Is the power turned on? → Are all connections correct? (page 73) → If the unit is in the multi picture mode, press the COPY button for printing. (page 67) • When the alarm buzzer sounds: → Has the thermal head overheated? (page 100) → Is the signal of the picture input? → Is the paper loaded correctly? (page 58) • Paper feeds, but printing does not start. → Is the paper loaded with the thermo-sensitive side up? (page 59)
Black borders or missing portions around the printout.	This may result according to the video signal input to the printer. → Adjust the printout size. (page 88)
Paper jam	• Open the door panel by pressing the OPEN/CLOSE button, then slowly pull out the jammed paper and remove it. • There is condensation within the unit. → Moving the unit suddenly from a cold place to a warm place often results in condensation forming. In the event of condensation forming, remove the paper, turn off the power and leave the unit for about one to two hours.
Printout is dirty.	The thermal head is dirty. → Clean the thermal head with the supplied head cleaning sheet. (page 95)
The printer stops printing when it prints continuously black images.	This is likely to occur if the printer prints continuously 15 or more dark pictures. In such a case, the buzzer sounds. This is because there is a protective circuit that guards against heat buildup of the thermal head. Stop printing for a while.
White lines or small letters on the screen are not printed clearly.	Is TRAP FILTER of the TRAP FILTER sub menu set to ON when the input signal is a black and white signal? (page85)
Small squares appear over the whole screen.	Is TRAP FILTER of the TRAP FILTER sub menu set to OFF when the input signal is a color signal? (page 85)
The printout is too dark or too light.	• Is the 75 ohm sub menu set correctly? (page 86) • is PAPER TYPE of the PAPER TYPE sub menu set correctly? (page 76) • Is GAMMA CURVE of the GAMMA CURVE sub menu set correctly? (page 76)
The printout seems stretched.	Is ASPECT of the ASPECT sub menu set to 1:1? → Set to 4:3. (page 81)

Error Messages

If a problem occurs, an error message stating the problem appears in the printer window display. This section lists error messages together with their possible causes and remedies. Note the messages and act accordingly.

Error message	Possible cause and remedies
MOTOR TROUBLE	Motor trouble has occurred.
	→ Contact your Sony service facility or Sony dealer.
SENSOR TROUBLE	Sensor trouble has occurred.
	→ Contact your Sony service facility or Sony dealer.
CHECK PAPER	The paper roll has been exhausted. Or the paper is not loaded correctly.
	→ Load the paper correctly. (page 58)
NO INPUT	The printer is not receiving an input signal.
	→ Check that the connections between signal source equipment and the printer are secure. (page 73)
	→ Check whether the video equipment is outputting a video signal in playback mode.
PLEASE WAIT	Please wait a little while.
PLEASE WAIT HEAD IN COOLING	The thermal head has overheated.
	→ Leave the printer until the head cools down and this message disappears.
DOOR OPEN	The door panel is open.
	→ Close the door panel.
INPUT MISMATCH	A different signal [1] is input.
	→ Check the input signal.
OVER SPEC	The signal of the horizontal scanning frequency and the number of lines over the specified values is input.
	→ Check the input signal.
NO IMAGE	The COPY button is pressed when no image is captured.
	Press the PRINT button to capture the image in the single picture mode. (page 61)
	Press the CAPTURE button to capture the image in the multi picture mode. (page 64)

1) The different signal has two kinds of meanings.
   One — the signal is different from the currently selected signal. For example, when the settings of LOAD 1 are loaded, the signal specification saved in LOAD 1 is different from the previous signal. The other meaning is when the signal whose horizontal scanning frequency and the number of lines are different from those of the current signal is input, with AUTO SCAN set to OFF.

Location and Function of Parts and Controls

For details, refer to the pages indicated in parentheses.
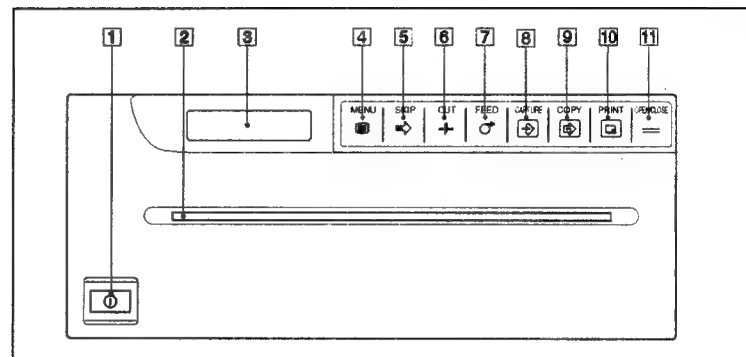
[1] ① Power ON/OFF switch (58, 61, 95)
Turns the power on.

[2] Paper outlet (59, 96)

[3] Printer window display
Displays the printer condition in the regular print mode.
Displays the menu in menu operation mode.
If an error occurs, a corresponding error message is displayed.

Paper type

Indicates the cursor position in the multi picture mode. The underline appears at the position where the cursor is placed and the image is captured.

```
TYPE2        1 2
Q1   STD6    3 4
```

Indicates the setting of MULTIPICTURE.
Indicates the IMAGE SIZE setting.
Number of print quantity

[4] ⊜MENU button (64, 69, 71, 74, 75)
Used for menu operation. By pressing the MENU button, the door panel opens slightly and the sub panel appears. Also, press the MENU button to return to the main menu from the sub menus.

[5] ⇒SKIP button (67)
Press to move the cursor to the desired position in the multi picture mode.

[6] ✛CUT button (60, 62, 68, 71)
Press to cut the paper. Pressing this button during printing results in stopping the printing.

[7] ♂FEED button (60, 62, 68, 72)
Press to feed the paper. The paper is fed as long as the FEED button is held down. Pressing this button during printing results in stopping the printing.

[8] ⊕CAPTURE button (67)
Press to capture the images in memory in the multi picture mode. The button is not activated in the single picture mode.
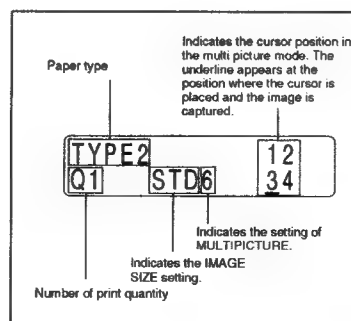
Location and Function of Parts and Controls (Continued)

9 ⊕ **COPY button (62, 67, 68)**
Press to print another copy of the previous printout in the single picture mode.
Press to print images stored in memory in the multi picture mode.

10 ⊡ **PRINT button (62)**
Press to capture the image currently displayed on the video monitor and then start printing in the single picture mode. This button is not activated in multi picture mode

11 **OPEN/CLOSE button (58, 60, 62, 68, 95, 96)**
Press to open or close the front door. Also, press to interrupt printing.
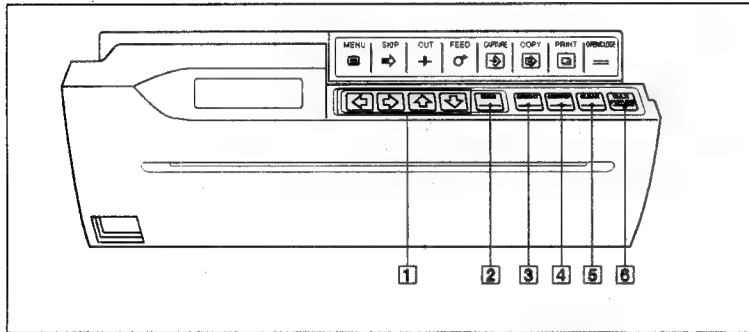
1 **Cursor keys (64, 69, 71, 74, 75)**
Used for menu operation.

2 **EXEC button (69, 74, 84, 86, 87, 92, 93)**
Press to execute settings on the sub menus.

3 **BRIGHT button (63, 68, 78)**
Press to display the BRIGHTNESS sub menu.

4 **CONTRAST button (63, 68, 78)**
Press to display the CONTRAST sub menu.

5 **CLEAR button (69, 86)**
Press to display the CLEAR sub menu in the multi picture mode.

6 **MULTI PICTURE button (65, 81)**
Press to display the MULTIPICTURE sub menu.
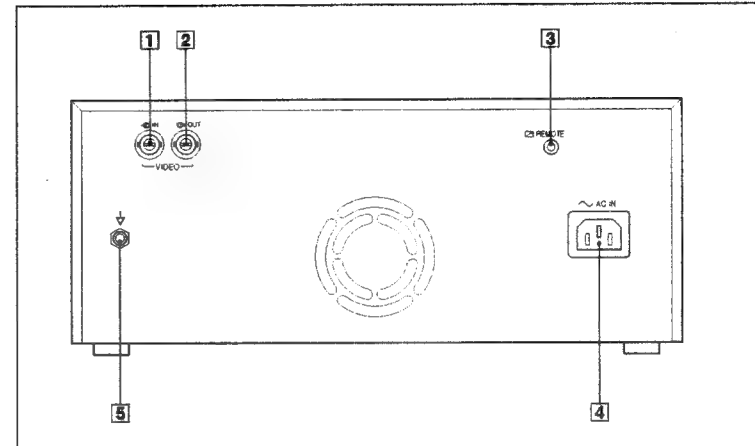
1 ⊣⊙ **VIDEO IN (input) connector (BNC type) (73)**
Connect to the video output connector of the video equipment.
Refer to "Important safeguards/notice for use in the medical environments" on page 54.

2 ⊙→ **VIDEO OUT (output) connector (BNC type) (73)**
Connect to the video input connector of the video monitor. The signal which is input to the VIDEO IN connector is output (through signal).
Refer to "Important safeguards/notice for use in the medical environments" on page 54.

3 ⊠ **REMOTE connector (73, 98)**
Connect the optional RM-91 remote commander or the optional FS-20 foot switch for controlling print operation from a distance.

4 ∿ **AC IN (AC power input) connector 73)**
Connect to a wall outlet using the supplied AC power cord.

5 ▽ **Equipotential terminal (73)**
Used to connect to the equipotential plug to bring the various parts of a system to the same potential.
Refer to "Important safeguards/notice for use in the medical environments" on page 54.

SECTION 2
SERVICE OVERVIEW

2-1. PC BOARD LOCATION

SE-441 Board

SU-42 Board

MA-91 Board

SE-443 Board

HN-256 Board

SU-41 Board

PTC-98 Board

SE-485 Board

SE-486 Board

SE-442 Board
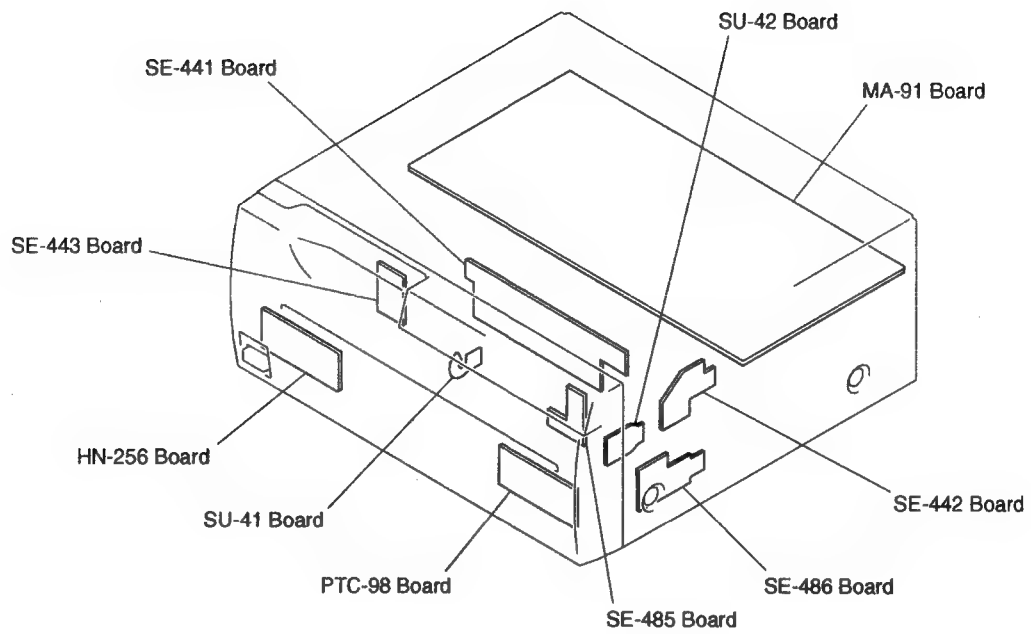
2-2. REMOVAL OF THE COVER AND THE PANELS

NOTE:
Remove the cover and the panels in the numerical order as shown.

2-2-1. Removal of the Top Cover
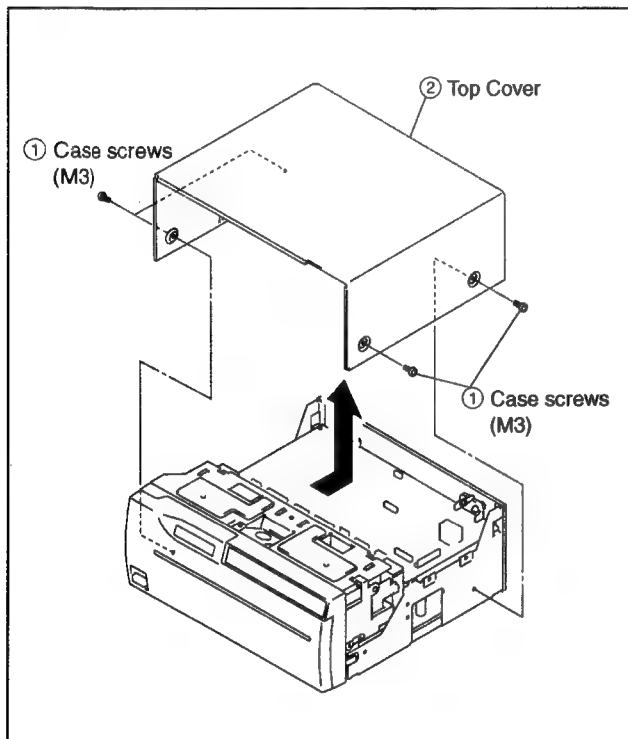
2-2-2. Removal of the Door Panel
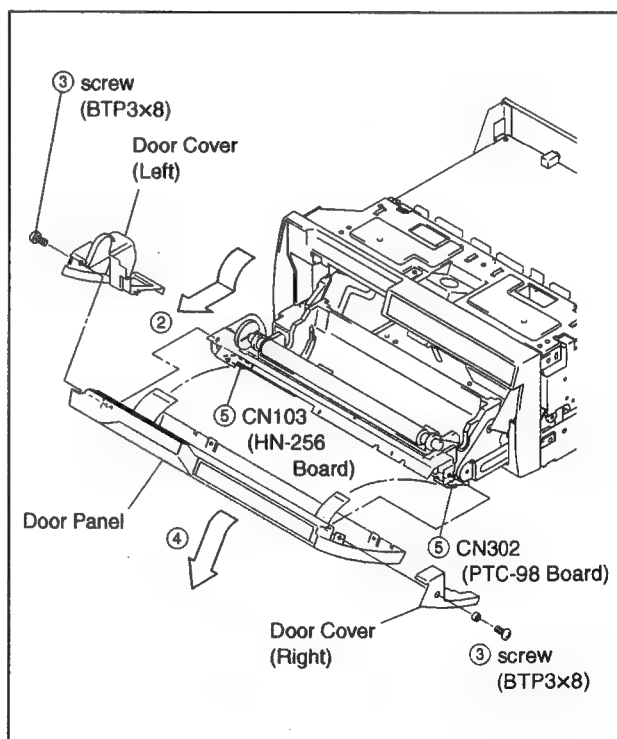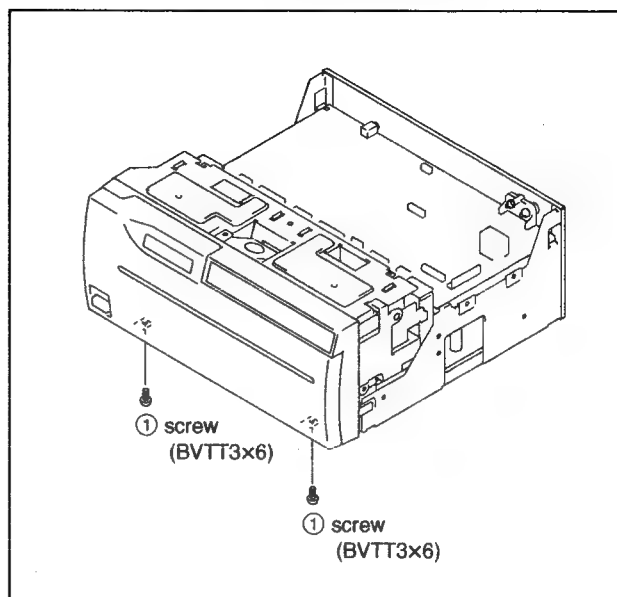
2-2-3. Removal of the Front Panel

Cutter Unit

③ screws
(BVTT3×5)

HN-256
Board

① CN102

① CN101

② screws
(BVTT3×5)

① CN301

PTC-98 Board

① CN303
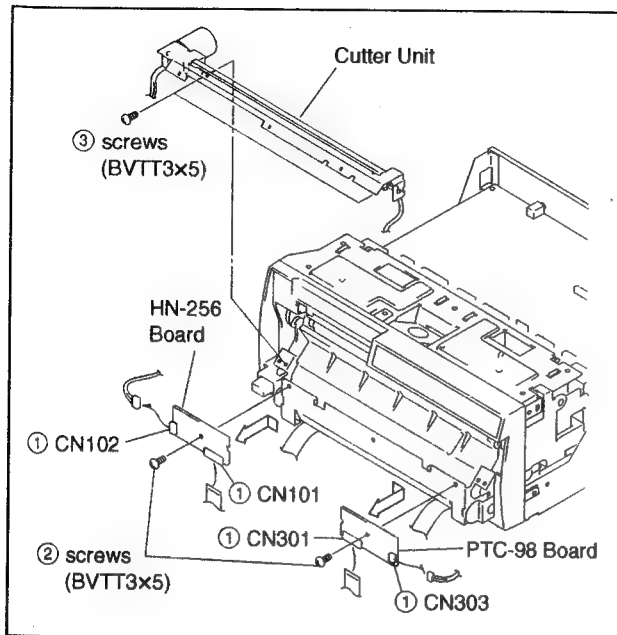
NOTE :

**Open the paper tray before removing the front panel.
For opening the paper tray, pull the tray close with the
press arm pressed.**

Press Arms

MA-91 Board

⑤ screws
(BVTT3×6)

Front Panel

④ CN207

Paper Tray

⑥ claws

⑥ claws

⑤ screws
(BVTT3×5)

⑤ screws
(BVTT3×6)

Note on Front Panel Installation :
Be sure to insert the four claws ⑥ in position.

2-2-4. Removal of the Rear Panel

③ screws
(screw M3
with tooth W)

② screws
(PS3×5)

Rear Panel

③ screws
(screw M3
with tooth W)

① screw
(B3×8)

2-3. REMOVAL OF THE MAIN PARTS

NOTE :
Remove the main parts in the numerical order as shown.

2-3-1. Removal of the Mechanical Block

③ screw (BVTT3×6)

③ screw (BVTT3×6)

Mechanical Block

hole "a"

① CN201
① CN202
① CN203
① CN204

Mecha Assy Guide Shaft

① CN209
① CN206

② screws (BVTT3×6)
② screws (BVTT3×6)
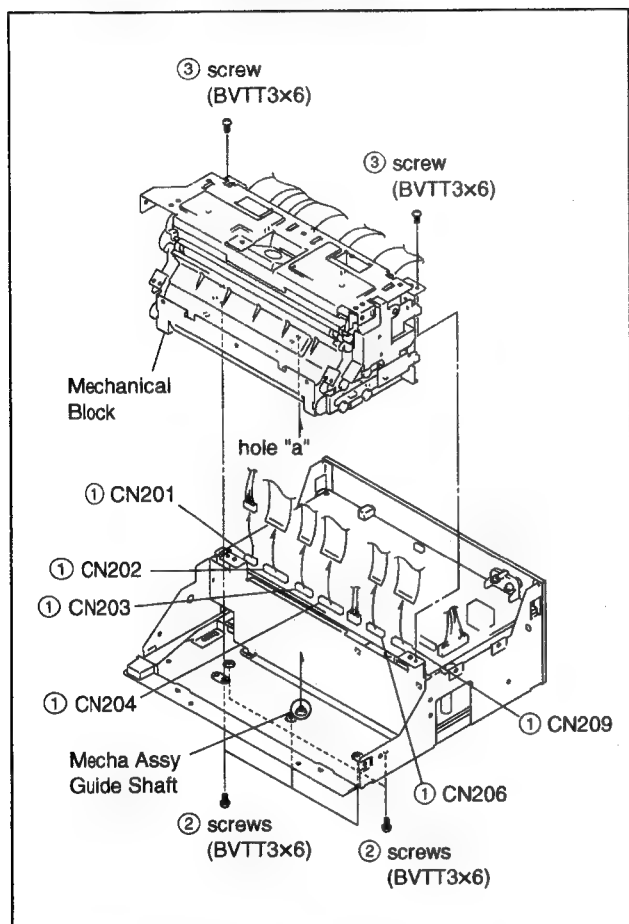
Note on Mechanical Block Installation :
Insert the mechanical assy guide shaft on the chassis into the hole "a" of the mechanical block.

2-3-2. Removal of the MA-91 Board and the Switching Regulator

② screws (screw M3 with tooth W)

MA-91 Board

② screws (screw M3 with tooth W)

① CN201
① CN202
① CN203
① CN204

① CN210
① CN207
① CN209
① CN205
① CN206
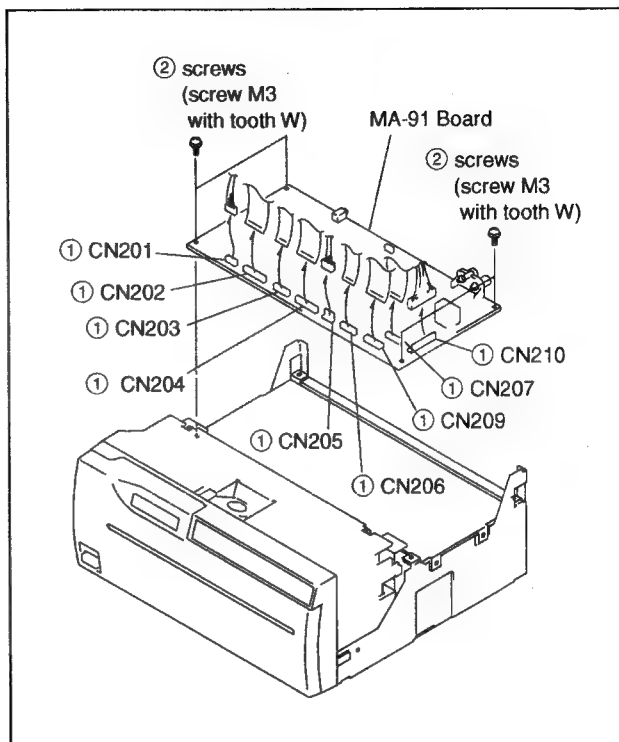
2-3-3. Removal of the Thermal Head
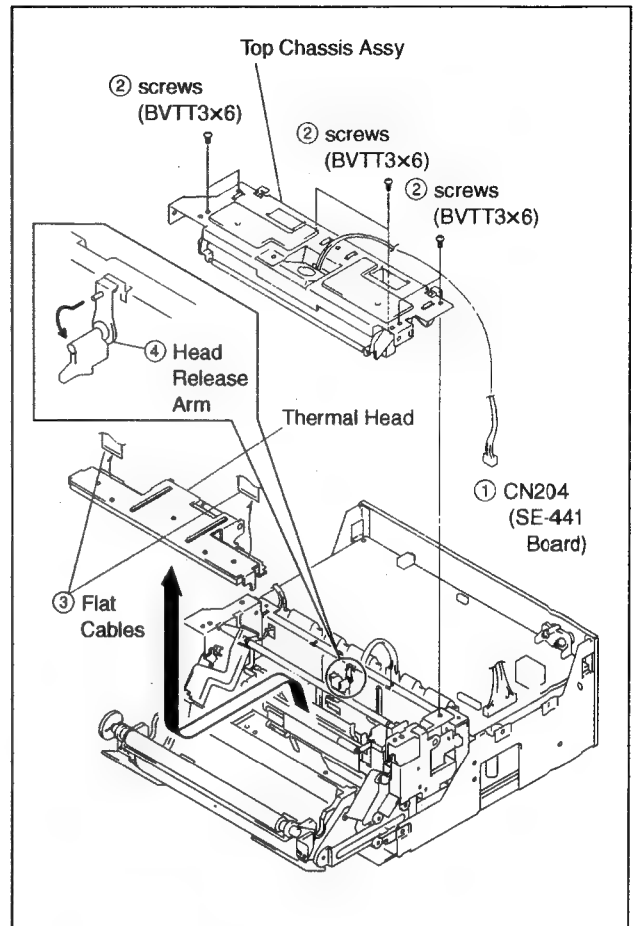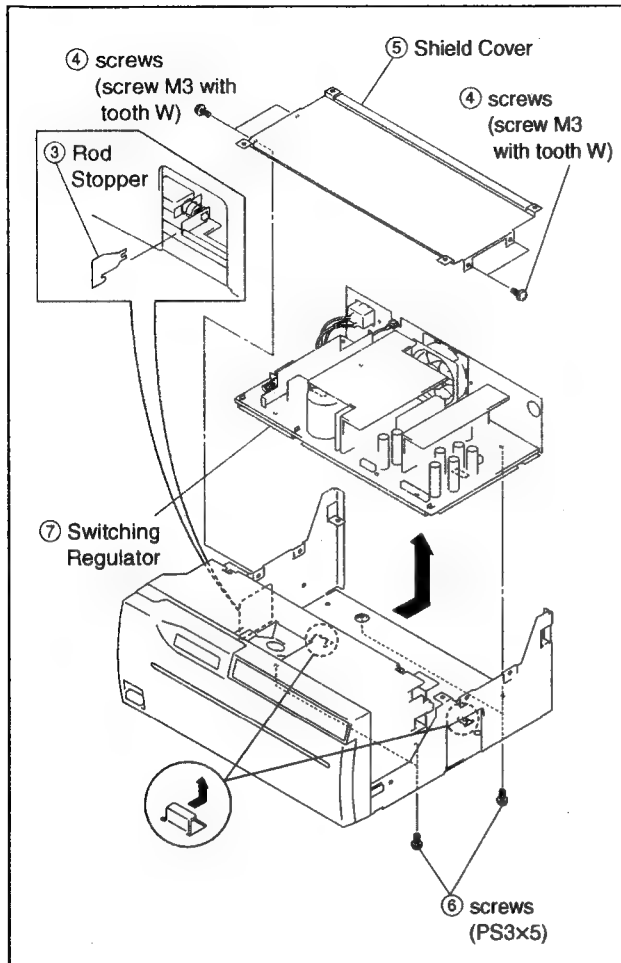
How to rotate the head release arm :
Pull and rotate the arm in the counterclockwise direction to the position of stopper.

SECTIN 3
ELECTRICAL ALIGNMENT
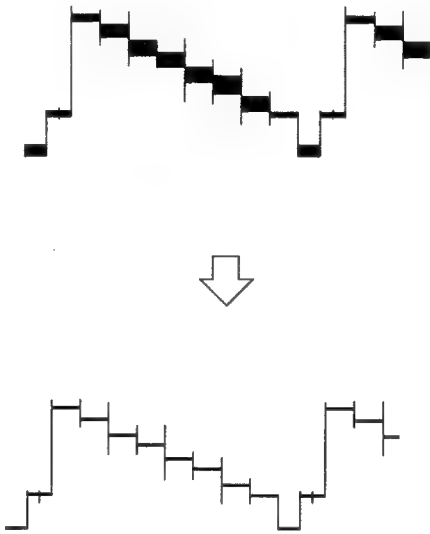
[Equipment Required]
Oscilloscope
Digital voltmeter
Color-bar pattern generator (1410/1411 signal generator)
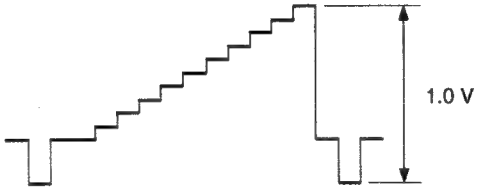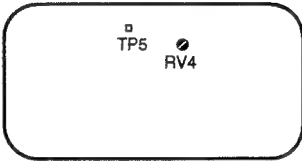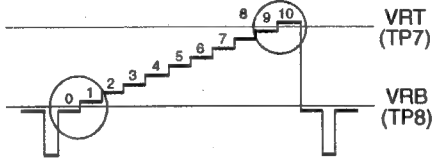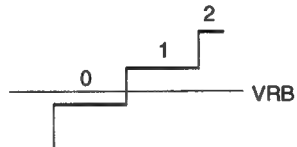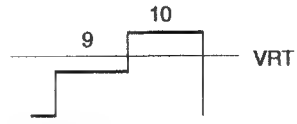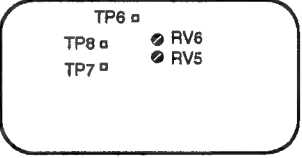
3-1. TRAP ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Input signal NTSC signal color bar (1410 signal generator) PAL signal color bar (1411 signal generator) • Set trap filter to ON at the menu mode. • Adjust FL1 using NTSC color bar input. Next, adjust FL2 using PAL color bar input.	TP5 (AMP IN)/MA-91 (E-1) Output waveform The remain of chroma level is the minimum.	❷ FL1/MA-91 (J-2) ❷ FL2/MA-91 (J-2) MA-91 TP5 ☐ FL1 ☐ FL2 ☐
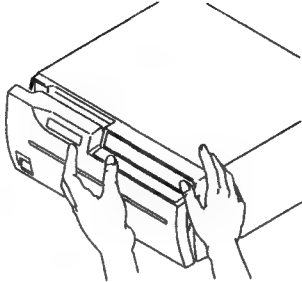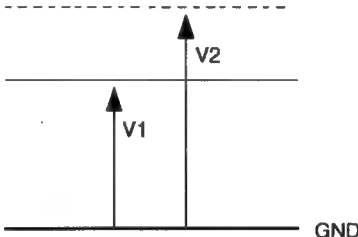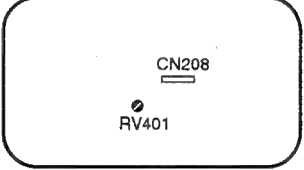
3-2. VIDEO LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments

• Input signal 10 step signal
  NTSC : 1410 signal generator
  PAL : 1411 signal generator
 	
• In case, monitor is not connected,
  set 75 ohm termination to ON at
  the menu mode, it is connected to
  OFF.
 	
• Adjust RV4 (AGCOFFCONT)
  using 10 step signal input.
	TP5 (AMP IN)/MA-91 (E-1) Output waveform
	
	1.0 V
	
	Adjust so that video signal level is 1.0 V.
		AGCOFFCONT Adjustment
		⊘ RV4/MA-91 (G-2)
		
		MA-91
		
		TP5 ⊘ RV4
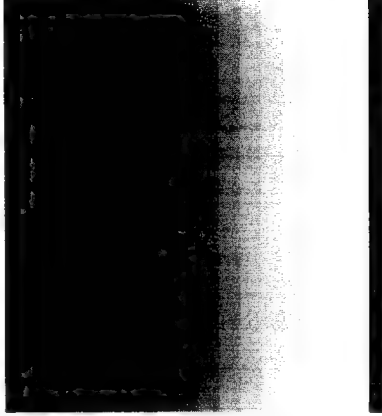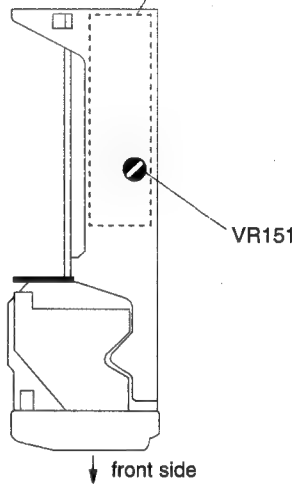
3-3. BRIGHTNESS AND CONTRAST ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments

• Input signal 10 step signal
  NTSC : 1410 signal generator
  PAL : 1411 signal generator
 	
• In case, monitor is not connected,
  set 75 ohm termination to ON at
  the menu mode, if connected, set
  to OFF.
 	
• Adjust RV5 (C ADJ) and RV6
  (B ADJ) using 10 step signal input.
 	
• Set CONTRAST and BRIGHTNESS
  to the center position at menu mode.
	TP6 (AD IN)/MA-91 (E-1) Output waveform
	
	VRT (TP7)
	VRB (TP8)
	
	RV6
	
	    2
	  1
	0 VRB
	
	Adjust so that mid voltage
	between 0 and 1 is equaled
	to the VRB voltage.
	
	RV5
	
	    10
	  9
	      VRT
	
	Adjust so that mid voltage
	between 9 and 10 is
	equaled to the VRT voltage.
		C ADJ Adjustment
		⊘ RV5/MA-91 (F-2)
		B ADJ Adjustment
		⊘ RV6/MA-91 (F-2)
		
		MA-91
		
		TP6 ▫
		TP8 ▫ ⊘ RV6
		TP7 ▫ ⊘ RV5

3-4. DOOR LOCK SENSOR ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Input signal : nothing • Open the door while it is pushed by hand. At that time (locked condition), measure the voltage and adjust RV401.	 CN208 (pin 9)/MA-91 (G-3) Output voltage V1 : The voltage when the paper tray is locked by hand during opening or closing of it. (Approximately: 7.5 V) $V2 = V1+2.0V$ Adjust so that the voltage of CN208 (pin 8) becomes V2.	⊘ RV401/MA-91 (E-4) MA-91 CN208 ⊘ RV401

3-5. HEAD VOLTAGE ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• Input signal: nothing • Turn the power switch to ON while pushing the PRINT , COPY and FEED buttons. • Print: Push the PRINT button.	Adjust VR151 so that 17 step signal becomes smoothly gradation.	❷ VR151 switching regulator Switching Regulator (right side view) VR151 ↓ front side

SECTION 4
CIRCUIT OPERATION DESCRIPTION

OUTLINE

Electrical circuit of UP-980/980CE consists of following blocks.

VIDEO CIRCUIT

TRAP filter and AGC process are performed against input video signal and A/D converted.

MEMORY & HEAD CONTROL G/A

Print data is fetched frame memory (DRAM). Image data on the memory is converted into PWM and sent it to the thermal head.

FRAME MEMORY (DRAM)

Print data is memorized.

MENU CONTROL CPU

Key control and LCD control are performed and communicated with system control.
Setting values are stored at EEPROM and controls menu setting.

SYSTEM CONTROL CPU

Various blocks are watched and controlled.

MOTOR DRIVE

Motors of head, platen, cutter, fan and door are driven according to the command from system control.

SENSOR CIRCUIT

Sensor values of head, paper, cutter, door and etc. are detected.

OVERALL
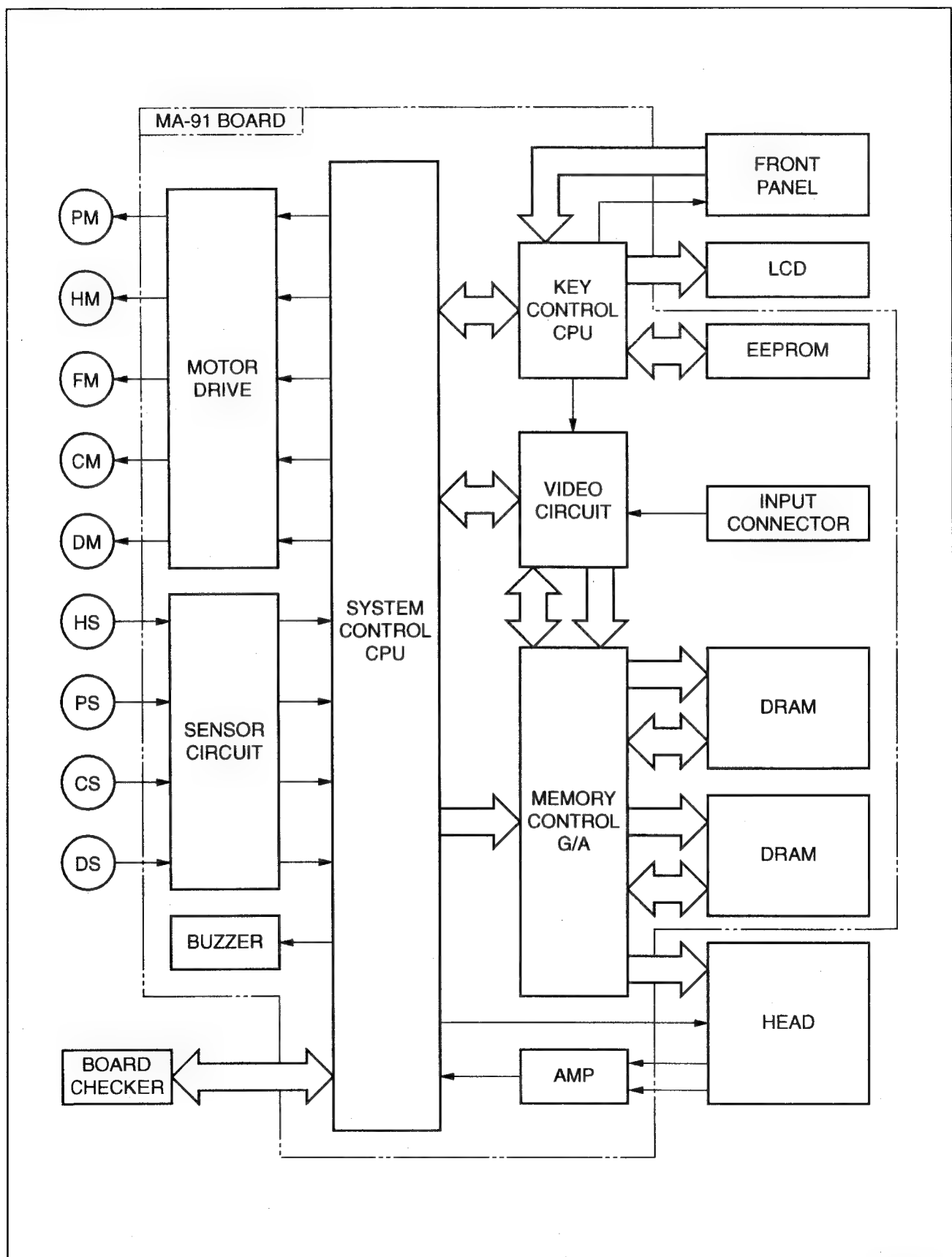
VIDEO BOARD (MA-91)
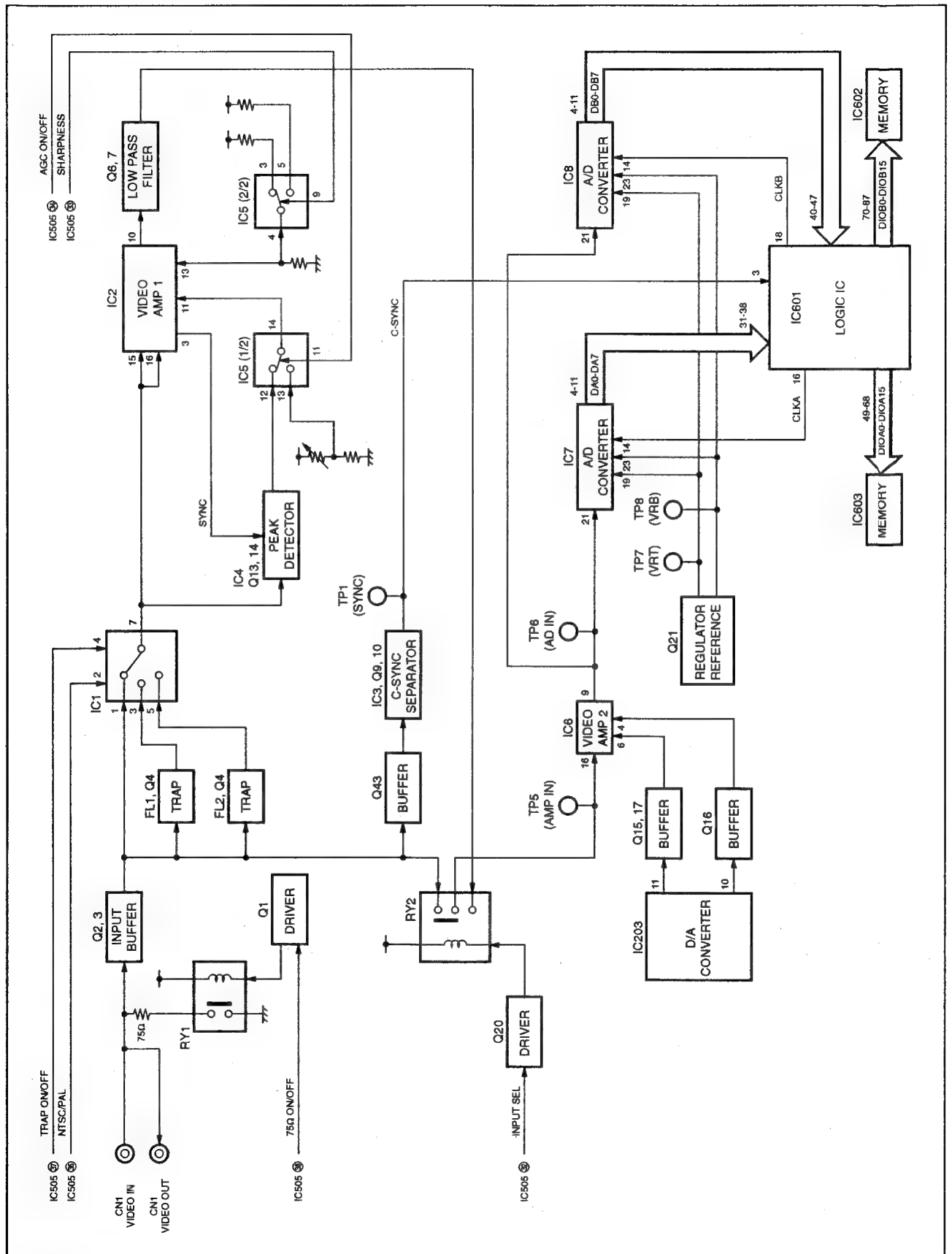
4-1. VIDEO CIRCUIT

4-1-1. Input Trap Filter Circuit, C-SYNC Process Circuit

The composite video signal is inputted to MA-91 board from BNC connector (CN1-VIDEO IN). 75 ohm termination is controlled by system control (IC505) using relay (RY1) according to setting of menu. After that, it is divided three signal systems, high scan signal for (fH=31.5 kHz), normal scan signal for (fH=15.75 kHz) and for C-SYNC processing via input buffer. For high scan signal is not processed and sent it to the video amplifier 2. And for normal scan signal is passed through the buffer and divided more three systems, the signal passed through trap filter (FL1) for NTSC, the signal passed through trap filter (FL2) for PAL, no processed signal is inputted to the analog switch (IC1 pins 1, 3 and 5). Selection of signal is performed by system control (IC505) and inputted to the video amplifier 1 (IC2). C-SYNC processing signal is extracted the sync signal from the composite signal by the transistor Q10 and IC3.

4-1-2. Sharpness and AGC Circuit

The signal from analog switch (IC1) is divided two systems, one is inputted to the video amplifier 1 (IC2 pins 15 and 16), another is inputted to the peak detection circuit for AGC. Sharpness is switched Soft and Hard by changing the voltage that is inputted to the video amplifier 1 (IC2 pin 13). The voltage is switched by analog switch (IC5) and controlled by system control (IC505). AGC is performed by using contrast amplifier in the video amplifier 1 (IC2). When setting AGC to ON, the voltage is peak voltage of input video signal that is obtained by peak detection circuit (Q13, Q14, IC 4), when setting AGC to OFF, the reference voltage is outputted from analog switch (IC5) by controlling system control (IC505), both voltages are fed back to video amplifier 1 (IC2 pin 11) and controls gain of amplifier. C-SYNC signal for AGC circuit is used the signal outputted from video amplifier 1 (IC2 pin 3).

Peak Detection Circuit
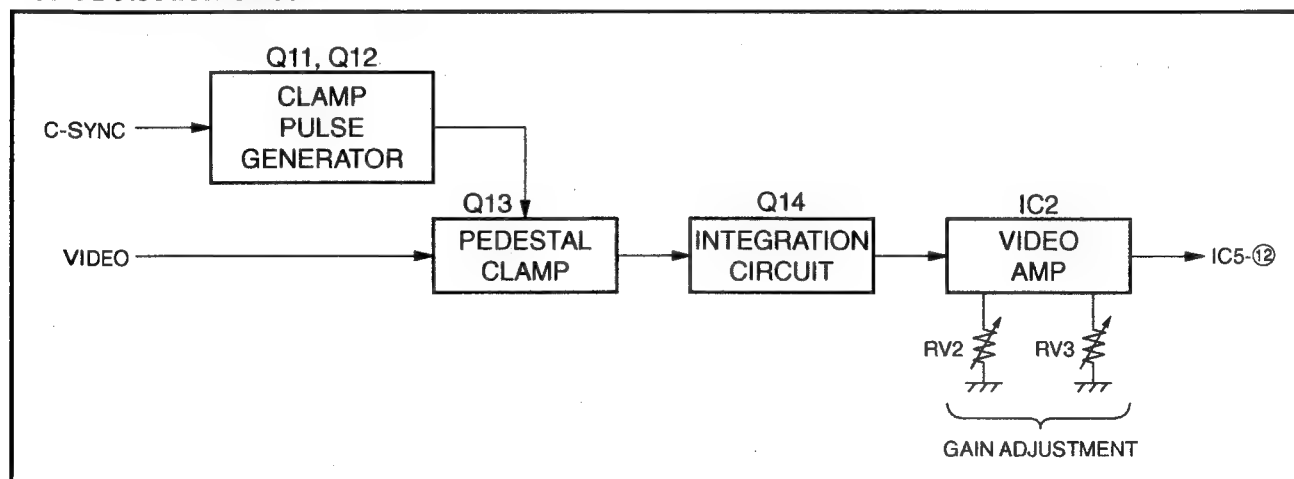
4-1-3. Brightness, Contrast Control and A/D Conversion

The signal from video amplifier 1 (IC2 pin 10) via low pass filter (Q6, Q7) and the nothing processed signal for high scan are inputted to relay (RY2). This relay is controlled by system control. This relay selects high scan or normal scan signal and it is inputted to the video amplifier 2 (IC6 pin 16). In video amplifier 2, amplitude of input video signal according to the value of BRIGHTNESS or CONTRAST in the menu item of front section is adjusted. That method is, key controller (IC201) make the voltage (IC203 pins 10 and 11) that is corresponded each setting value by D/A converter (IC203). Its voltage is inputted to the video amplifier 2 (IC6 pins 4 and 6) and its amplitude and etc. are changed. After that, the video signal (IC6 pin 9) adjusted at video amplifier 2 is converted digital signal at A/D converter (IC7, 8) and stored the memory.

4-2. OSCILLATOR CIRCUIT

The clock (IC604-1) is generated by attaching crystal oscillator (23 MHz) to IC604 outside. This clock is matched the phase at rising down of H-SYNC when fetching the video signal. At that time, the clock signal is disordered. It is corrected at the circuit (IC601, IC605) to reduce the noise. Memory control and etc. are performed by this clock (IC601 pin 25) as master clock. This signal is also used as sampling clock of A/D converter. Furthermore, this signal is delayed the phase for high scan by using the delay IC (IC605). 46MHz sampling is performed by shifting the phase of two A/D converters (IC7, 8) parallel.

Oscillator Circuit
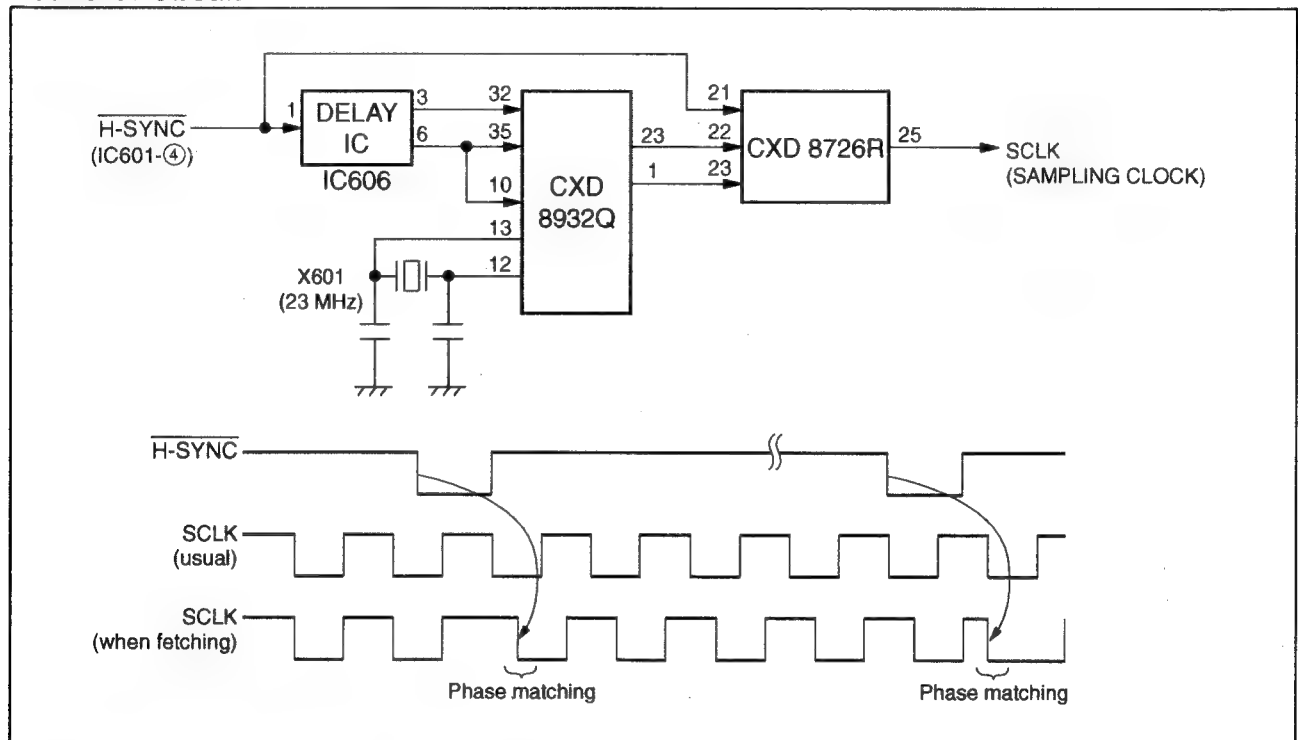
4-3. IC601 PERIPHERAL CIRCUIT

IC601 consists of following blocks.
(1) Register for serial data storing from system control (IC505)
    ① Various mode setting   ——— 22 byte
    ② SYNC signal processing parameter ——— 4 byte
    ③ Coefficient for scaling calculation ——— 128 byte
    ④ Gamma data   ——— 34 byte
(2) Frame memory write and read control
(3) Thermal head control
(4) SYNC signal processing circuit
(5) 1 line memory (for print)
(6) Image scaling calculation circuit
Each block operation is decided by serial data from system control (IC505) and mode switching terminal.

4-3-1. Serial Data Reading from System Control

The system control (IC505) has four kinds of data to send IC601. There are respectively registers for storing. Which register is selected by combination of "H" and "L" inputs to IC601 pins 137 and 138.

Pin 137	Pin 138	Register to be selected
H	H	Image scaling calculation circuit
H	L	Gamma data
L	H	SYNC signal processing parameter
L	L	Various mode setting

4-3-2. Writing to the Frame Memory

Image data of next one frame is written in frame memory by inputting fetch pulse from system control to IC601 pin 125. Fetching method to the memory is changed by sampling frequency of this time. UP-980/980CE use two 16 M-DRAMs (1 word is 16 bit) as image memory. In case sampling frequency is 46 MHz, the data is written in DRAM every four sampling data (32 bit). This time memory space is address space of 1024×1024 and depth direction of one address is 32 bit. In this case, two DRAMs are controlled simultaneously during fetching to the memory. In case sampling frequency is except 46 MHz, the data is written in DRAM every two sampling data (16 bit). This memory space is address space of 1024×2024 and depth direction of one address is 16 bit. In this case, two DRAMs are controlled separately.
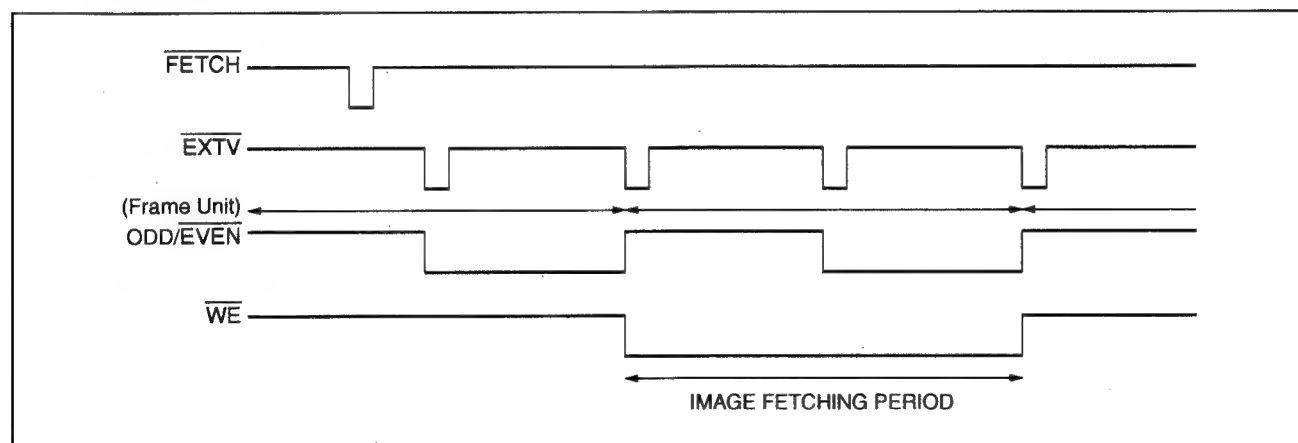
4-3-3. Transfer from Frame Memory to Line Memory

If $\overline{COPY}$ pulse is inputted from system control to IC601 pin 128, IC601 performs $\overline{COPYING}$ signal to "L", and the print operation is started. In order to print, selected one line data from frame memory is transferred to one line memory in IC601. IC601 reads necessary print data from frame memory. Its print range and print character direction are indicated by mode set of system control. This data is scaled and stored at one line memory. Transfer of the data is performed every "L" period of $\overline{INTV}$ signal. $\overline{INTV}$ signal is pulse for print timing of one line. It is made at IC601 and locked approximately 10 ms period.

4-3-4. Thermal Head Control and One Line Memory

All thermal head control is performed by IC601. Built-in one line memory is used when transferring a print data to the thermal head. Refer to the thermal head section for the detail.

IC601 BLOCK DIAGRAM
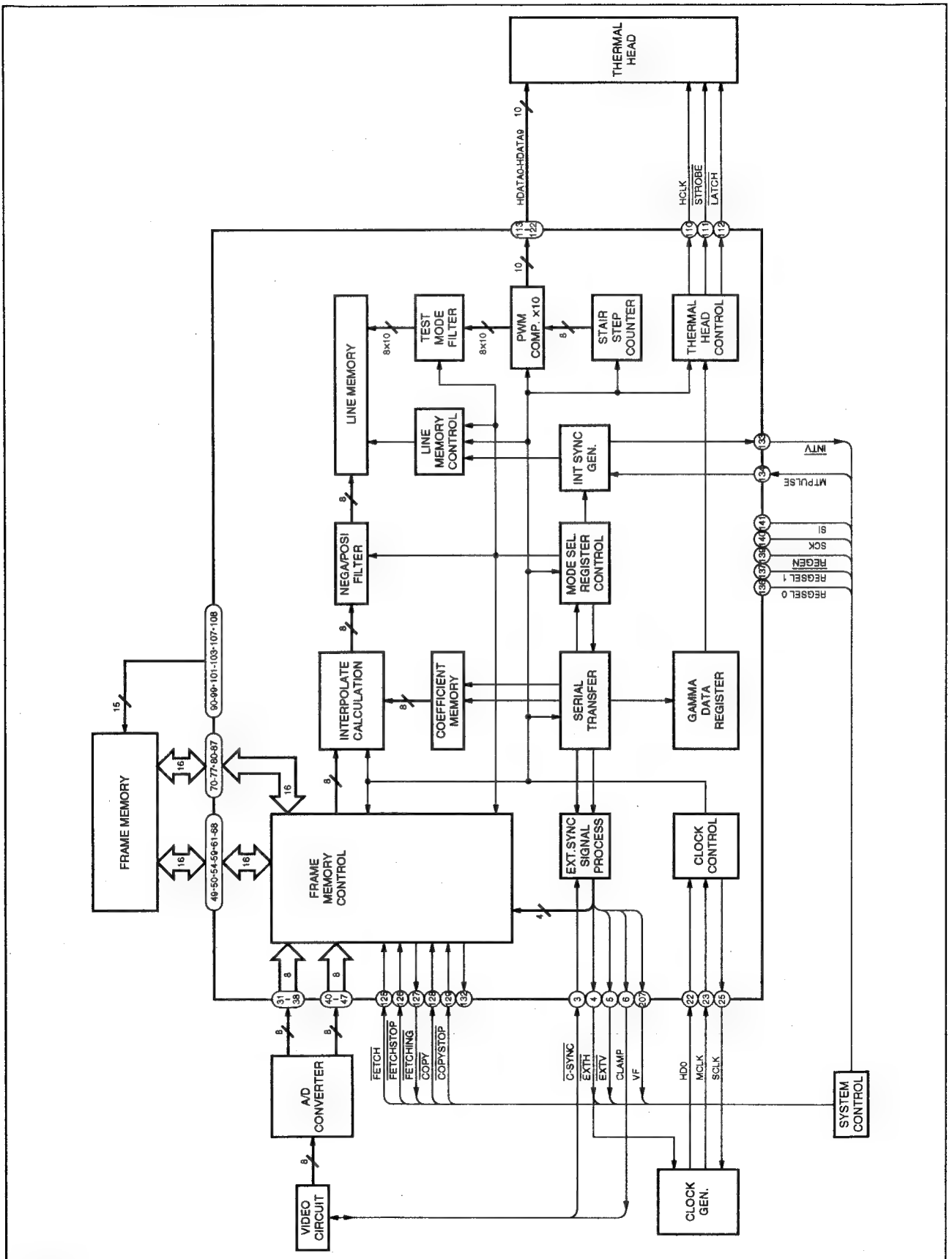
4-4. MENU CONTROL SECTION

Menu control consists of IC201(microcomputer) mainly and processes the following.

4-4-1. Watch of Various Keys

IC201 watches various keys of front panel and door panel. Keys are all L active.

Example) PRINT key

IC201 pin 64	PRINT key condition
L	Pushed
H	Not pushed

4-4-2. LCD (Liquid Crystal Display) Control

IC201 displays menu and message on the LCD according to key operation. Main terminal functions of LCD are as follows.

Terminal name	Function
DB(7:0)	Input and output data bus
EN	Read or write start
R/nW	Read or write selection
RS	Register selection
Vo	Liquid crystal drive voltage
Vled+	LED power supply voltage
Vled−	
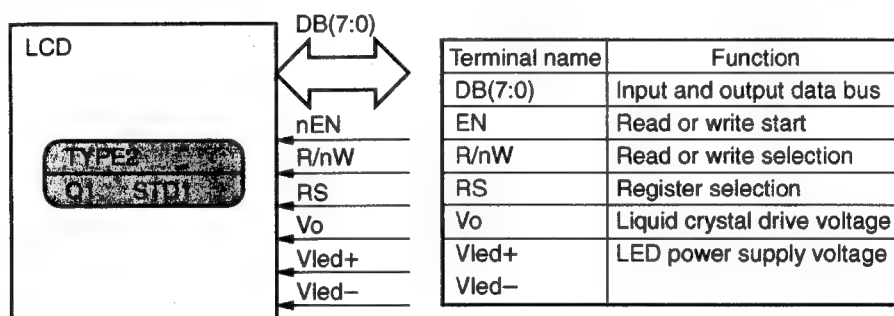
4-4-3. EEPROM Control

IC201 loads or saves set menu contents to EEPROM (IC202). Main terminal functions of EEPROM are as follows.

Terminal name	Function
E(2:0)	Address input
SDA	Serial data
SCLK	Serial CLK
WMODE	Writing mode
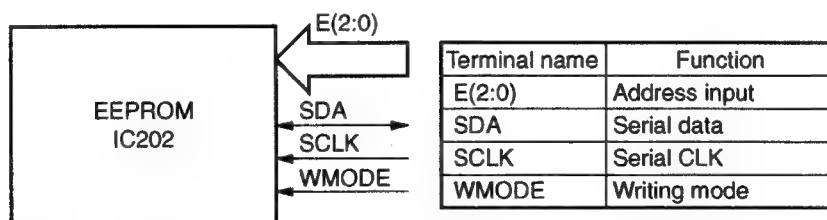
4-4-4. D/A Converter Control

IC201 outputs BRIGHTNESS, CONTRAST and voltage level of LCD character density by controlling A/D converter (IC203). Main terminal functions of A/D converter are as follows.

Terminal name	Function
DO	Serial data output
DI	Serial data input
CLK	Serial CLK
LD	D/A output start
A(6:1)	Analog output
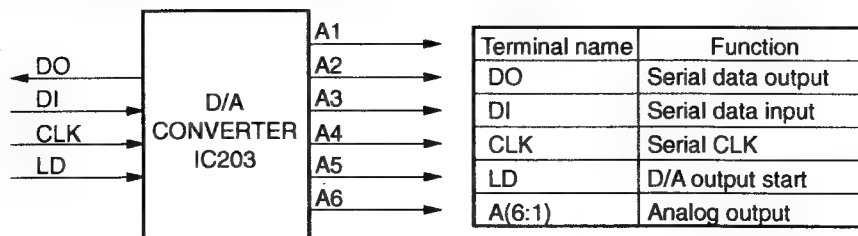
4-4-5. Communication with IC505 (System Control CPU)

When a key is pushed or menu is set, IC201 communicates their contents to IC505 by the command using serial communication. For example, in case CUT key is pushed, IC201 detects it and sends the command to IC505. IC505 receives the command and cut operation is performed, IC505 returns OK code. If the condition is not obeyed the command (For example, there is not print paper.), IC505 returns NG code and performs caution operation.
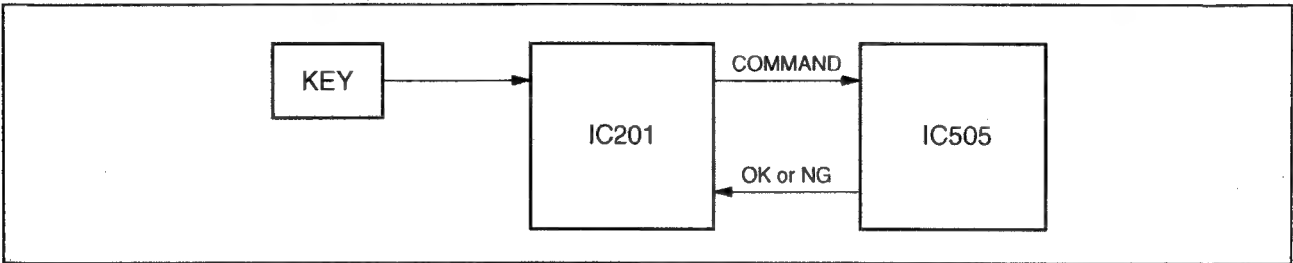
Communication outline between IC201 and IC505

Serial communication detail between IC202 (Microcomputer for key and menu Control) and IC505 (Microcomputer for system control) is explained. Before transferring the command, IC202 microcomputer outputs request signal (nSCIREQ=L) to IC505 microcomputer. If IC202 recognizes the acknowledge signal (nSCIACK=L), releases the request (nSCIREQ=H) and sends command of 3 byte length. If IC505 receives the command, judges the content and processes according to the command. The result is returned to IC202 with 2 byte data.
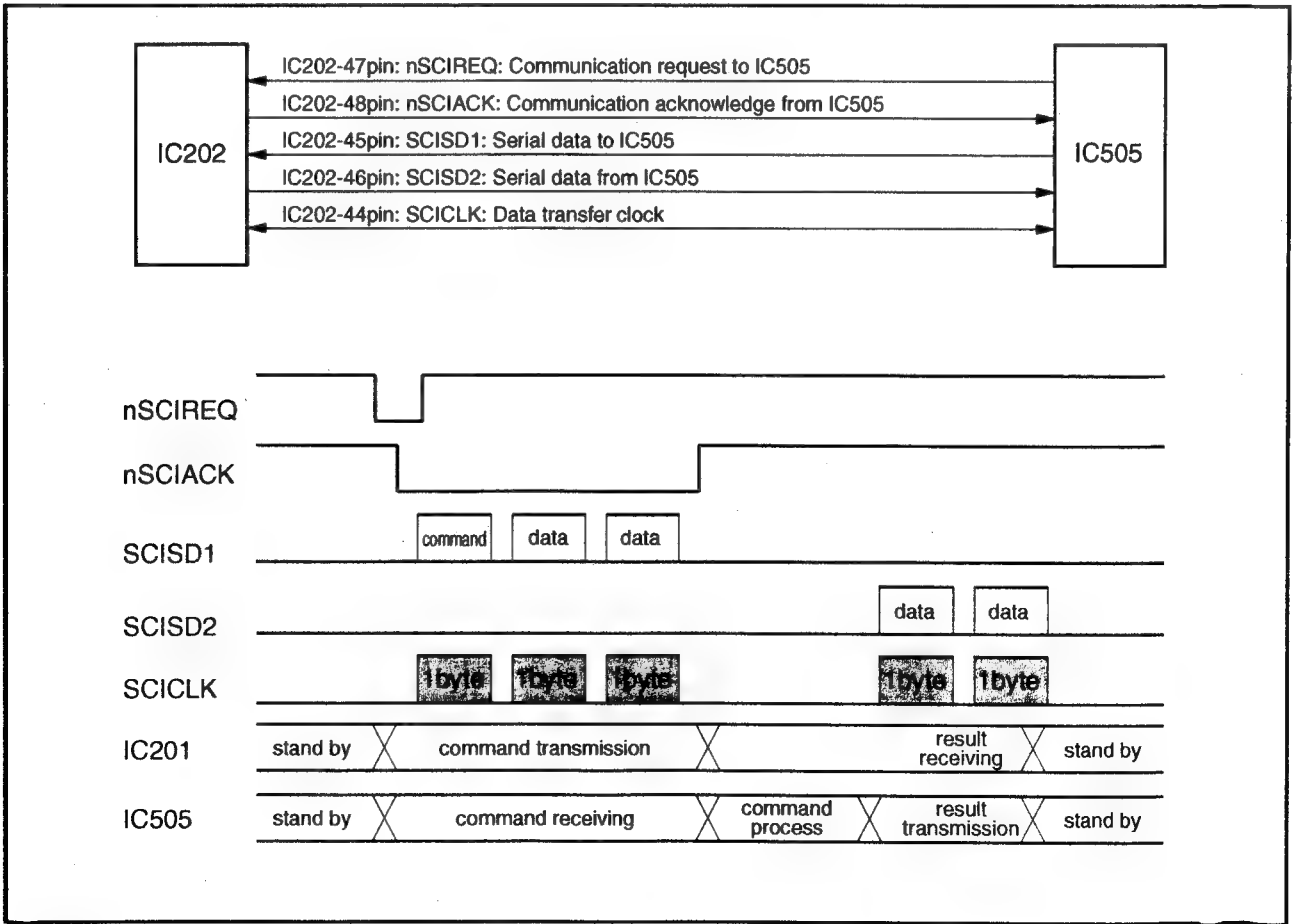
4-5. SYSTEM CONTROL SECTION

System control section consists of IC505 (microcomputer) mainly and processes the following.

4-5-1. Transmission with IC201 (Key and Menu Control CPU)

IC505 receives the command from IC201 and processes according to the command.
(Refer to 4-4. Menu Control Section for details.)

4-5-2. Platen Motor Control

IC505 pins 93, 94, 95 and 96 control correct rotation or reverse rotation and rotation speed of platen motor by operating driving transistors Q405, 406, 407 and 408.

PM_A1 (IC505-93pin)	L	L	H	H
PM_A2 (IC505-94pin)	H	H	L	L
PM_B1 (IC505-95pin)	L	H	H	L
PM_B2 (IC505-96pin)	H	L	L	H

correct rotation ◄──────► reverse rotation

4-5-3. Head Up and Down Control

Up and down motor of the head is driven by IC402. Correct rotation and reverse rotation are possible. And their controls are performed by IC505 pins 97 and 98. The head position is detected by optical type head position sensors (SE-441 board, PH201 and 202) and read by IC505 pins 79 and 80.

Operation of Head Up and Down Motor

Head motor	IC505-98pin	IC505-97pin	Operation
UP	L	H	Head is lifted.
DOWN	H	L	Head is down.
STOP	H	H	Stopped

Condition of Head Position Sensor

Head position sensor	IC505-80pin	IC505-79pin	Condition
TOP	L	L	Door lock is released.
HOME	L	H	Wait (Usual)
BOTTOM	H	L	Print

4-5-4. Door Open and Close Control

Open and close motor of the door is driven by IC403. Correct rotation and reverse rotation are possible. And their controls are performed by IC505 pins 99 and 100. Door position is detected by optical type door position sensors (SE-442 board PH401, 402) and read by IC505 pins 84 and 85.

Operation of Door Open and Close

Door motor	IC505-100pin	IC505-99pin	Operation
NEUTRAL	L	L	Neutral
CLOSE	L	H	Door is shut.
OPEN	H	L	Door is opened.
STOP	H	H	Stopped

Condition of Door Position Sensor

Door position sensor	IC505-85pin	IC505-84pin	Condition
CLOSE	L	L	Door is shut.
MENU	L	H	Menu is opened.
OPEN	H	L	Door is opened.

In case the door is shut, to judge whether door is completely shut or not, door position sensor detects and door lock sensor circuit (MA-91 board IC404 peripheral circuit) that is driving current detection type also detects and read by IC505 pin 87.

Condition of Door Lock Sensor

Door lock sensor	IC505-87pin	Condition
CLOSE	H	Door is shut.
OPEN	L	Door is opened.

In case the menu is opened, to inprove position accuracy, door position sensor and menu position sensor (SE-486 board Q701) of optical type also detect and read by IC505 pin9.

Condition of Menu Position Sensor

Menu position sensor	IC505-9pin	Condition
MENU POSITION	L	Menu position
OTHER	H	Except the menu position

4-5-5. Paper Cutter Control

Paper cutter motor is driven by IC401. Correction rotation and reverse rotation are possible. And their control is performed by IC505 pins 90 and 91. Cutter position is detected by cutter position sensor (including cutter unit) of switch type and read by IC505 pins 88 and 89.

Operation of Cutter Motor

Cutter motor	IC505-91pin	IC505-90pin	Operation
CUT	L	H	Cut
RETURN	H	L	Returned
STOP	H	H	Stopped

Condition of Cutter Position Sensor

Cutter position sensor	IC505-89pin	IC505-88pin	Condition
CUT END	L	H	Cut is end.
HOME	H	L	Wait (Usual)

4-5-6. Watch of Paper Sensor

Whether the print paper is set in the unit correctly or not, it is detected by three pairs of optical type paper sensors (SE-485 board PH502, SE-443 board PH501 and PTC-98 board PH301) and read by IC505 pins 81, 82 and 83.

Condition of Paper Sensor (— : L or H)

IC505-83pin	IC505-82pin	IC505-81pin	Condition
H	—	—	No paper
—	L	H	No paper
L	—	L	There is a paper.
L	H	—	There is a paper.

4-5-7. Watch of the Head Temperature Sensor

The resistor value change of thermistor included in the thermal head is converted to the voltage by IC404. The result is fetched to IC505 pin 78 and is converted A/D. Cause of this A/D converted digital value, the density (Gamma) adjustment, fan motor control for head cooling and head in cooling judge by IC601 (Gate array) are performed.

4-5-8. Head Fan Motor (for Head Cooling) Control

Head fan motor is operated by controlling the driving transistor Q409 using IC505 pin 2. When the head temperature is over heat or during print mode, head fan motor is turned ON.

Operation of Head Fan Motor

IC505-2pin	Operation
L	OFF
H	ON

4-5-9. Analog Circuit Section Control

IC505 controls followings.

Pin No	I/O	Explanation	Process of IC505
IC505 pin 37	O	Selection of trap filter ON/OFF	L : ON H : OFF
IC505 pin 36	O	Selection of NTSC/PAL	L : When NTSC signal is inputted. H : When PAL signal is inputted.
IC505 pin 34	O	Selection of AGC function ON/OFF	L : ON H : OFF
IC505 pin 33	O	Selection of SHARPNESS ON/OFF	L : ON H : OFF
IC505 pin 32	O	Selection of Hi-SCAN/VIDEO	L : When VIDEO signal is inputted. H : When Hi-SCAN signal is inputted.
IC505 pin 31	I	Composite sync signal	Measure horizontal sync frequency and use it signal distinction.
IC505 pin 38	O	75 ohm termination	L : OFF H : ON

4-5-10. Gate Array IC601 Control

IC505 transfers operation mode data to gate array IC601. Start and end indication of CAPTURE (video signal fetch to the memory) operation and COPY (memorized image is sent to the head.) operation are performed.

[CAPTURE Mode]
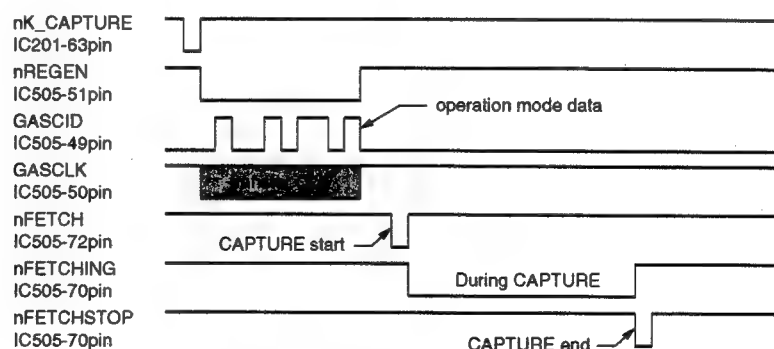
[COPY mode]
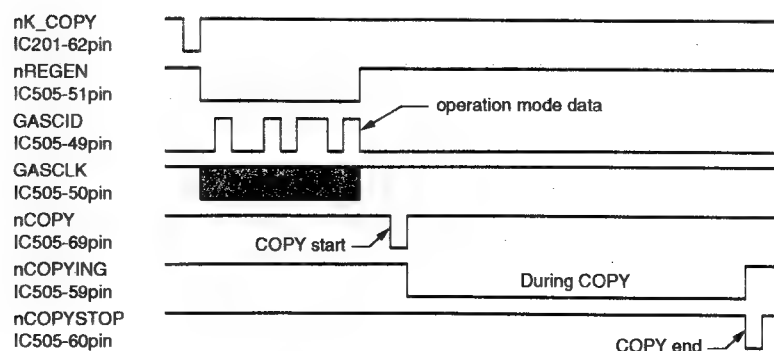
4-6. THERMAL HEAD SECTION

4-6-1. Structure

Thermal head consists of one line 1280 dot (128 bit × 10). There are ten combinations such as follows.
(DATA input is 10 DATA [10 : 1], other terminals are common.)
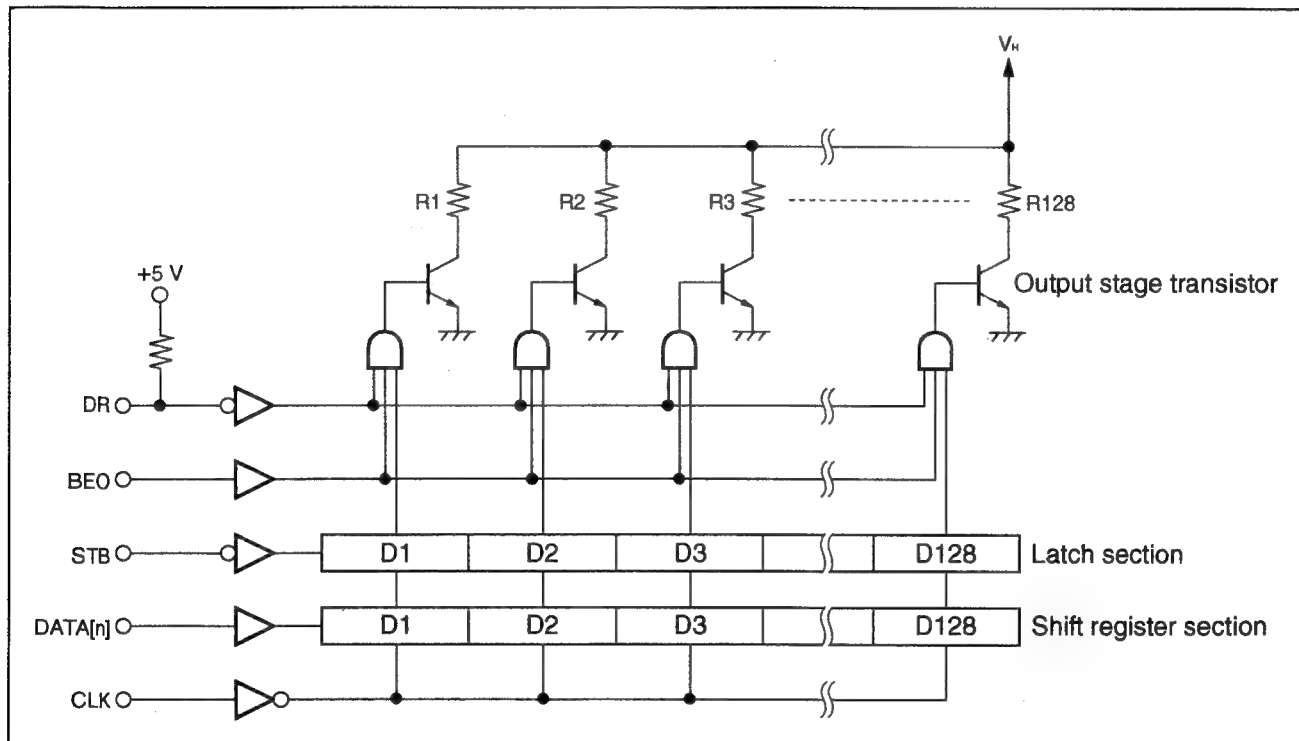
Thermal Head Inner Circuit Structure

Timing Chart

Stair Generation
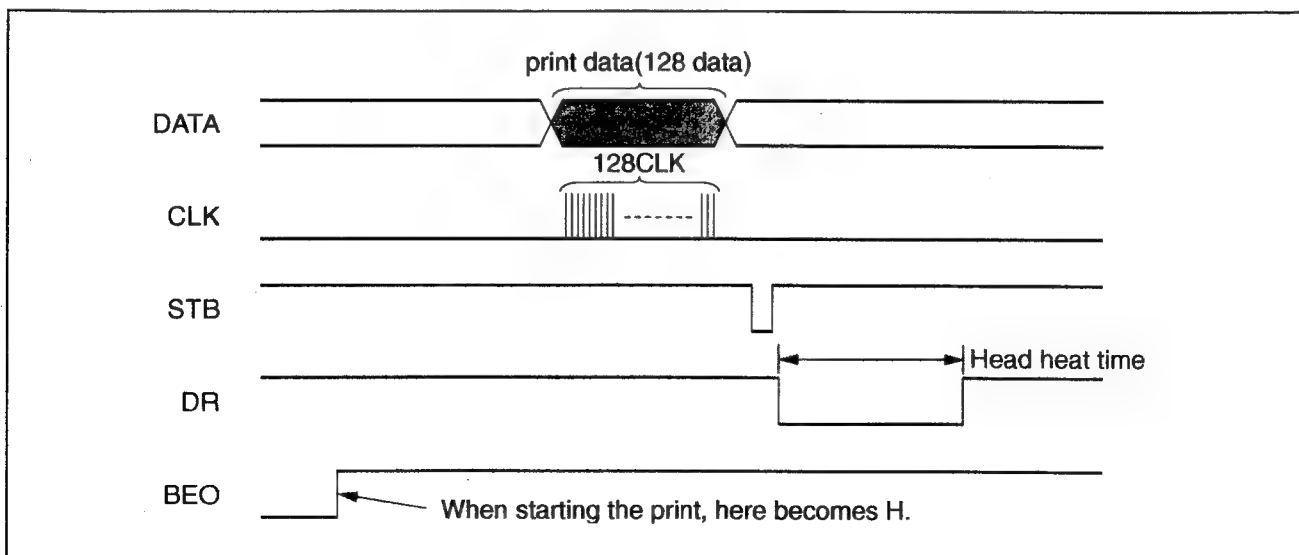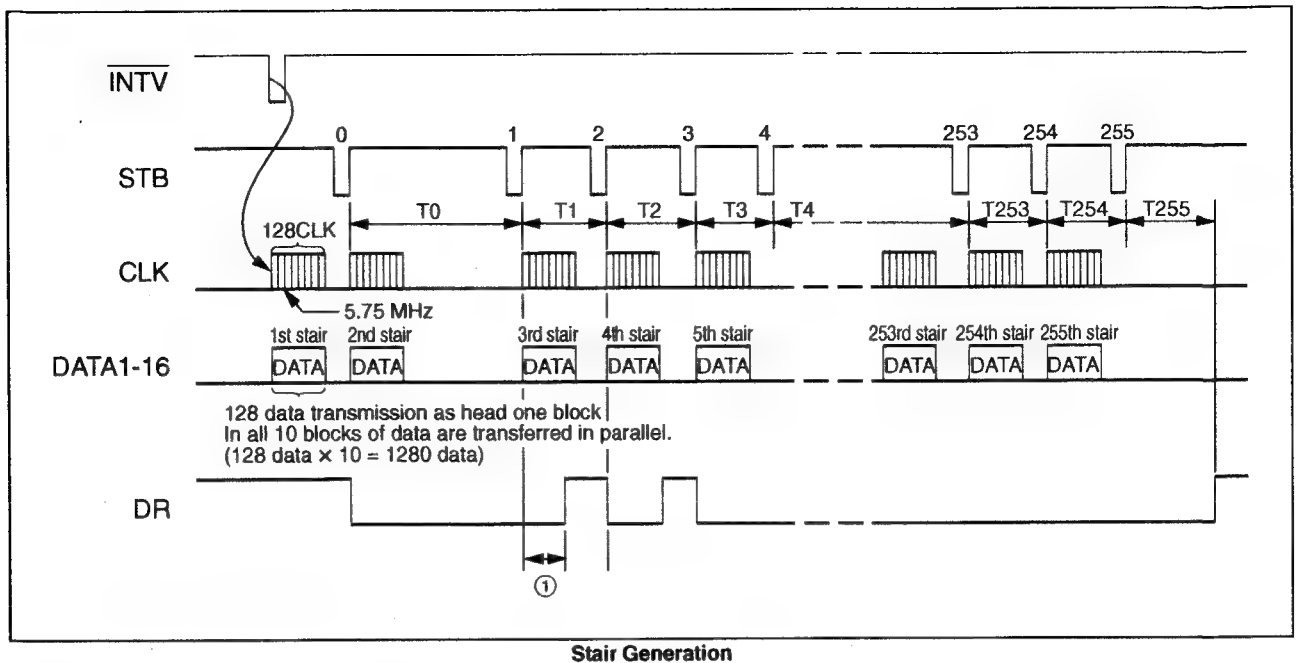
4-6-2. Basic Operation

All the signals are inputted to the head from the gate array IC601. This section only explains the operations for one block. (The operations for the other blocks are the same.)

(1) The 128 data of print data are inputted to the shift register synchronized with CLK.

(2) When the STB pulse is inputted, the data inputted in (1) is moved from the shift register section to the latch section.

(3) When the DR pulse is inputted, the output stage transistors are switched ON/OFF by the "H" and "L" latch section data. While the transistor is turned ON, the resistors heat up and thermosensitive paper changes color. The amount of heat generated is controlled by varying the length of the DR pulses, so the color darkness of the printing on thermosensitive paper can be varied.

Note : The BEO terminal goes from "L" to "H" when starting the print, from "H" to "L" when print is ended.

4-6-3. Stair Generation

As explained in the last section on basic operation, the darkness of the printing can be controlled with the DR pulses, but it is possible to change the darkness by changing the "H" and "L" data input to the latch section.
The method is explained as follows.

(1) One line image data recorded in image memory IC602 and 603 is fetched to line memory inside of IC601 every print operation one line (nINTV) by controlling IC601.
(2) Fetched data in line memory is inputted to the stair generation circuit inside of IC601. The stair data generation circuit outputs fetched 8 bit data in line memory as 1 through 256 stair data. If 8 bit data is 128, 1 through 128 stair of data 1 through 16 outputs "H" against the head, 129 stair or more outputs the data "L".
(3) Output data from data generation circuit to the head is transferred to the shift register section of the head with synchronized CLK outputted from IC601.
(4) When IC601 inputs the "1" STB pulse to the head, the 1st stair data is transferred to the latch section and 2nd stair data is inputted to the shift register section. At the same time, the DR pulse goes to "L" and the "H" data among the data input as the first stair data switches on the corresponding output stage transistors, heating up the corresponding resistors. The "L" data switches OFF the corresponding output stage transistors so those resistors do not heat up. This operation is carried out 256 times. If "H" data is sent the 1 through 256 times, the resistors generate heat the entire time and the printing is the blackest possible. If the "H" data is only high until the 1 through 128 times, the printing is an intermediate stair. This is how intermediate stairs are generated by sending number of data corresponding 8 bit data size to the head and generating heat in the resistors that many times.
(5) Thus, by controlling the time until the next data is transferred to the latch, the darkness of intermediate stairs can be achieved simply. In other words, intermediate stair darkness can be controlled by changing the STB intervals, T1, T2, T3, T4, T5, T6 — T256. In this unit, IC601 matches the intervals T1 to T256 to the paper's gamma characteristic. This is called gamma characteristic control.
(6) If the DR pulse is also controlled as described in 4-6-2. Basic Operation, even fine stair can be expressed.

Note :   **The portion ① is generated when the STB pulse T interval is shorter than the transmission time to shift resistor.**

Thus, this unit provides smooth expression of intermediate stairs by controlling the STB pulse T interval and the DR pulse.

4-6-4. Temperature Compensation

As explained in 4-6-3. Stair Generation, intermediate stair are expressed by controlling the STB pulse T interval and the DR pulses, but since the energy required to make thermosensitive paper turn color varies with the room temperature and with the heat generated by and built up in the printing head during continuous printing. In this unit, IC505 measures the temperature change of the head from the thermistor (CN202 pins 15 and 16) included in thermal head and converts head temperature data of 8 bit. IC505 corrects density change against the temperature by reflecting gamma characteristic control of IC601. IC601 performs to compensate for temperature change controls the STB pulse T interval and the DR pulse, just as is done for stair generation. Specifically, when the temperature rises it reduces the STB pulse T interval and the DR pulses, but when the temperature falls, it increases the STB pulse T interval and the DR pulses.

4-6-5. Line Number Correction

When all resistors of the head are switched ON or when some resistors of the head are switched ON, total currents through the head are different. Therefore, the energy applied to each resistor has an error. If printing operation is performed without this correction, as a result, there is a line on the print where numbers of ON resistor are rapidly changed. And this unit has IC601 that includes correction circuit of this.

SECTION 5
TROUBLESHOOTING

5-1. PRINT IS FAULTY

```
                    ┌──────────────┐
                    │    START     │
                    └──────┬───────┘
                           │
                           ▼
                   ╱────────────────╲
                  ╱  Is video signal  ╲        ┌─────────────────────────┐
                 ╱  (AD-IN) available   ╲  NO   │ Peripheral circuits IC6 │
                ╱   at pin 21 of IC7     ╲─────▶│ and IC2 on MA-91 board  │
                 ╲  and IC8 on MA-91    ╱       │ are defective.          │
                  ╲     board?         ╱        └─────────────────────────┘
                   ╲────────────────╱
                        │ YES
                        ▼
                   ╱────────────────╲
                  ╱  Are video signals ╲       ┌─────────────────────────┐
                 ╱  output from data     ╲ NO   │ Peripheral circuits IC7 │
                ╱   buses of IC7 and IC8  ╲────▶│ and IC8 on MA-91 board  │
                 ╲  on MA-91 board?      ╱      │ are defective.          │
                  ╲────────────────────╱        └─────────────────────────┘
                        │ YES
                        ▼
                   ╱────────────────╲
                  ╱    Is signal      ╲         ┌─────────────────────────┐
                 ╱  available at pin    ╲  NO    │ Pins 16 and 18 line of  │
                ╱   14 of IC7 and IC8    ╲──────▶│ IC601 on MA-91 board    │
                 ╲  on MA-91 board?     ╱        │ are defective.          │
                  ╲────────────────────╱         └─────────────────────────┘
                        │ YES
                        ▼
                   ╱────────────────╲
                  ╱   Is test pattern ╲          ┌─────────────────────────┐
                 ╱  properly printed    ╲  NO     │ CN202 line on MA-91     │
                ╱   in test mode?        ╲───────▶│ board is defective.     │
                 ╲                      ╱         └─────────────────────────┘
                  ╲────────────────────╱
                        │ YES
                        │
                        │                        ┌─────────────────────────┐
                        │                        │ Peripheral circuits     │
                        └───────────────────────▶│ IC601, IC602 and IC603  │
                                                 │ on MA-91 board are      │
                                                 │ defective.              │
                                                 └─────────────────────────┘
```

5-2. PRINT IS TOO DARK OR TOO LIGHT

START

Is voltage (approx. 5.7 V) at pin 4 of IC6 on MA-91 board output when "CONTRAST"is set as center value?

NO → IC203 and IC201 or peripheral circuit of Q16 on MA-91 board are defective.

YES ↓

Is voltage (approx. 1.4 V) at pin 5 of IC6 on MA-91 board output when "BRIGHT" is set as center value?

NO → Peripheral circuits IC203 and IC201 or Q15 and Q17 on MA-91 board are defective.

YES ↓

Is voltage (approx. 1.5 to 2.5 V) available atpin 78 of IC505 on MA-91 board when head is at the normal temperature?

NO → Peripheral circuit IC404 and pins 15 and 16 of CN202 line on MA-91 board, or the thermistor in the head are defective.

YES ↓

Are the required voltages available at each terminal, 3 V at 19 pin of IC6 and IC7 on MA-91 board, and 1 V at 23 pin of the IC's?

NO → Peripheral circuit Q21 on MA-91 board is defective.

YES ↓

Is density of stair step printed in test mode properly?

NO → The head voltage or connecetor CN202 line on MA-91 board is defective.

YES → The data buses of IC7 and IC8, data buses of IC602 and IC603, or peripheral circuit IC2 on MA-91 board are defective.

5-3. LIQUID-CRYSTAL DISPLAY (LCD) IS OUT OF ORDER

```
                    ┌──────────┐
                    │  START   │
                    └──────────┘
                         │
                         ▼
                   ╱ Are signals ╲
                  ╱ available at pins 11 to 14 ╲  NO    ┌─────────────────────────┐
                 ╱  of CN209 on MA-91  ╲────────────────▶│ Pins 35 to 38 of IC201  │
                 ╲      board?       ╱                   │ line on MA-91 board are │
                  ╲                 ╱                     │ defective.              │
                   ╲              ╱                       └─────────────────────────┘
                       │ YES
                       ▼
                   ╱ Are signals ╲
                  ╱ available at pins 15 to 17 ╲ NO      ┌─────────────────────────┐
                 ╱  of CN209 on MA-91  ╲────────────────▶│ Pins 9 to 11 of IC201   │
                 ╲      board?       ╱                   │ line on MA-91 board are │
                  ╲                 ╱                     │ defective.              │
                       │ YES
                       ▼
                   ╱ Is voltage ╲
                  ╱ (1.6 to 0.1 V) available ╲ NO        ┌─────────────────────────┐
                 ╱  at pin 18 of CN209  ╲───────────────▶│ Pin 12 of IC203 line on │
                 ╲    on MA-91       ╱                    │ MA-91 board is defective.│
                  ╲    board?      ╱                      └─────────────────────────┘
                       │ YES
                       ▼
                   ╱ Are signals ╲
                  ╱ available at pins 7 to 10 ╲ NO       ┌─────────────────────────┐
                 ╱  of CN103 on HN-256 ╲───────────────▶│ CN101 on HN-256 board,  │
                 ╲      board?       ╱                   │ and CN211 and CN209 line│
                  ╲                 ╱                     │ on SE-441 board are     │
                                                         │ defective.              │
                       │ YES
                       ▼
                   ╱ Are signals ╲
                  ╱ available at pins 4 to 6 ╲ NO        ┌─────────────────────────┐
                 ╱  of CN103 on HN-256 ╲───────────────▶│ CN101 on HN-256 board,  │
                 ╲      board?       ╱                   │ and CN211 and CN209 line│
                  ╲                 ╱                     │ on SE-441 board are     │
                                                         │ defective.              │
                       │ YES
                       ▼
                   ╱ Is voltage ╲
                  ╱ (1.6 to 0.1 V) available ╲ NO        ┌─────────────────────────┐
                 ╱  at pin 3 of CN103  ╲───────────────▶│ CN101 on HN-256 board,  │
                 ╲    on HN-256      ╱                    │ and CN211 and CN209 line│
                  ╲    board?      ╱                      │ on SE-441 board are     │
                                                         │ defective.              │
                       │ YES
                       ▼                                 ┌─────────────────────────┐
                                                         │ The LCD, LCD harness, or│
                                                         │ IC201 on MA-91 board is │
                                                         │ defective.              │
                                                         └─────────────────────────┘
```

5-4. MENU SETTING IS NOT PROPERLY SAVED WHEN CHANGED. THE SETTING IS NOT LOADED AS SAVED.

```
                    ┌─────────────┐
                    │    START    │
                    └─────────────┘
                           │
                           ▼
                      ╱─────────╲
                     ╱ Are signals ╲
                    ╱  available at  ╲        ┌──────────────────────┐
                   ╱ pins 6 and 5 of ╲  NO   │ Pins 39 and 70 of    │
                   ╲ IC202 on MA-91   ╱──────▶│ IC201 on MA-91 board │
                    ╲ board when door╱        │ are defective.       │
                     ╲  is closed?  ╱         └──────────────────────┘
                      ╲───────────╱
                           │ YES
                           ▼
                      ╱─────────╲
                     ╱           ╲            ┌──────────────────────┐
                    ╱ Is pin 7 of ╲    NO    │ Pin 77 of IC201 on   │
                    ╲ IC202 on     ╱─────────▶│ MA-91 board is       │
                     ╲ MA-91 board╱          │ defective.           │
                      ╲ set high? ╱           └──────────────────────┘
                       ╲────────╱
                           │ YES
                           │
                           │                  ┌──────────────────────┐
                           └─────────────────▶│ IC202 on MA-91 board │
                                              │ is defective.        │
                                              └──────────────────────┘
```

Note:

Close the door to change the setting.

For closing the door, move the door from the menu position to the closed position using a MENU key or a OPEN/CLOSE key.

5-5. "PAPER CHECK" IS OUT OF ORDER

```
                    ┌─────────────┐
                    │    START    │
                    └─────────────┘
                           │
                           ▼
                    ╱─────────────╲
                   ╱   Is signal   ╲         ┌──────────────────────┐
                  ╱ from sensor avail╲  NO   │ D301 line on PTC-98 or│
                  ╲ able at pin 9 of  ╱─────▶│ SE-485 board is       │
                   ╲ IC405 on MA-91  ╱       │ defective.            │
                    ╲   board?      ╱        └──────────────────────┘
                     ╲─────────────╱
                          │ YES
                          ▼
                    ╱─────────────╲
                   ╱   Is signal   ╲         ┌──────────────────────┐
                  ╱ from sensor avail╲  NO   │ SE-443 board line is  │
                  ╲ able at pin 11 of ╱─────▶│ defective.            │
                   ╲ IC405 on MA-91  ╱       └──────────────────────┘
                    ╲   board?      ╱
                     ╲─────────────╱
                          │ YES
                          ▼
                    ╱─────────────╲
                   ╱   Is signal   ╲         ┌──────────────────────┐
                  ╱ from sensor avail╲  NO   │ PH301 line on PTC-98  │
                  ╲ able at pin 13 of ╱─────▶│ board is defective.   │
                   ╲ IC405 on MA-91  ╱       └──────────────────────┘
                    ╲   board?      ╱
                     ╲─────────────╱
                          │ YES
                          │                  ┌──────────────────────┐
                          │                  │ IC405 or pins 81 to 83│
                          └─────────────────▶│ line of IC505 on MA-91│
                                             │ board are defective.  │
                                             └──────────────────────┘
```

5-6. CUTTER IS OUT OF ORDER

```
                    ┌─────────────┐
                    │    START    │
                    └─────────────┘
                           │
                           ▼
                      ◇ Is signal              ┌──────────────────────────┐
             input to pin 58 of IC201 on  ─NO─▶│ The front panel or pin 11 of
                      MA-91 board?              │ CN207 line on MA-91 board
                           │                    │ is defective.            │
                          YES                   └──────────────────────────┘
                           │
                           ▼
                                           NO   ┌──────────────────────────┐
             ◇ Does cutter motor operate? ─────▶│ Pins 90 and 91 of IC505, or
                           │                     │ IC401 and Q402 line on
                          YES                    │ MA-91 board are defective.│
                           │                     └──────────────────────────┘
                           ▼
                     ◇ Are signals
               from sensor available       NO   ┌──────────────────────────┐
          at pin 2 of CN209 and pin 13 ───────▶│ The cutter sensor or SE-441
               of CN206 on MA-91               │ board is defective.      │
                      board?                    └──────────────────────────┘
                           │
                          YES
                           │
                           ▼
                                                ┌──────────────────────────┐
                                                │ Pins 89 and 88 of IC505 on
                                                │ MA-91 board are defective.│
                                                └──────────────────────────┘
```

5-7. HEAD OPERATION (UP & DOWN) IS OUT OF ORDER

```
                    ┌─────────────┐
                    │    START    │
                    └─────────────┘
                           │
                           ▼
                      ╱─────────╲                    ┌──────────────────────────┐
                     ╱           ╲       NO           │ Pins 97 and 98 of IC505, or │
                    ╱ Does head    ╲───────────────▶  │ IC402 and Q403 line on      │
                     ╲ motor operate?╱                │ MA-91 board are defective.  │
                      ╲           ╱                   └──────────────────────────┘
                       ╲─────────╱
                           │ YES
                           ▼
                      ╱─────────╲
                     ╱ Are signals ╲
                    ╱ from sensor    ╲     NO         ┌──────────────────────────┐
                   ╱ available to     ╲──────────────▶│ The head position sensor line│
                    ╲ pins 17 and 19   ╱              │ on SE-441 board is defective.│
                     ╲ of CN201       ╱               └──────────────────────────┘
                      ╲ on MA-91     ╱
                       ╲ board?    ╱
                        ╲────────╱
                           │ YES
                           │
                           │                          ┌──────────────────────────┐
                           └─────────────────────────▶│ IC406 to pins 79 and 80 of │
                                                       │ IC505 line on MA-91 board  │
                                                       │ are defective.             │
                                                       └──────────────────────────┘
```
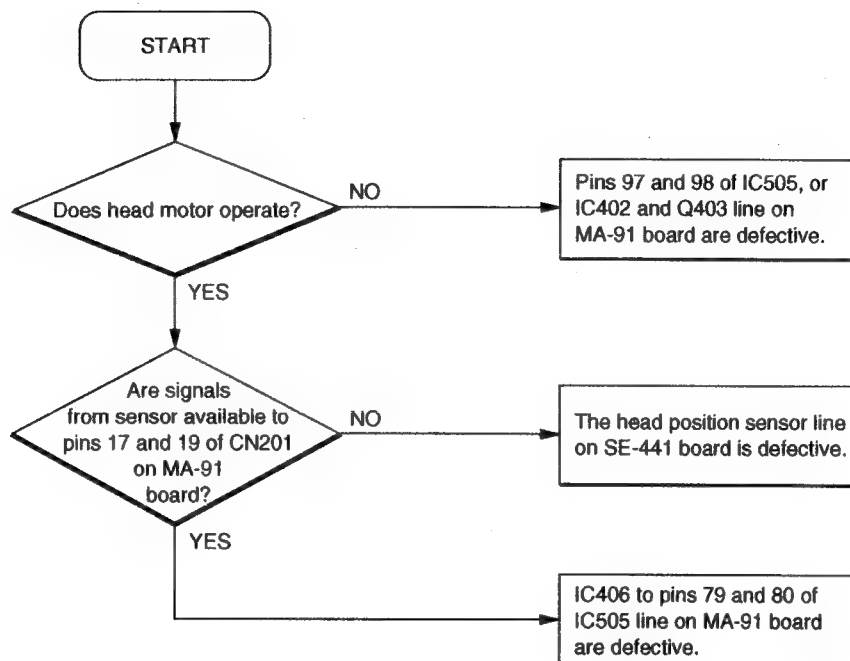
5-8. PAPER FEEDING IS OUT OF ORDER

```
        ┌─────────────┐
        │    START    │
        └─────────────┘
               │
               ▼
        ╱───────────────╲            YES      ┌──────────────────────┐
       ╱  Fuse F401 is    ╲─────────────────▶│ Fuse F401 on MA-91 board │
       ╲    blown.        ╱                   │ is defective.            │
        ╲───────────────╱                    └──────────────────────┘
               │ NO
               ▼
     ╱───────────────────╲
    ╱   Are pulse signals   ╲        NO       ┌──────────────────────┐
   ╱  output from pins 4, 6, 8,╲────────────▶│ Pins 93 to 96 of IC505, or │
   ╲   and 10 of IC407 on    ╱                │ IC407 line on MA-91 board  │
    ╲     MA-91 board?       ╱                │ are defective.             │
     ╲───────────────────╱                   └──────────────────────┘
               │ YES
               ▼
      ╱─────────────────╲
     ╱    Is signal       ╲        NO         ┌──────────────────────┐
    ╱  output from CN201 on ╲───────────────▶│ Peripheral circuits Q407 and │
    ╲    MA-91 board?       ╱                 │ Q408, and CN201 line on      │
     ╲─────────────────╱                      │ MA-91 board are defective.   │
               │ YES                          └──────────────────────┘
               │
               │                              ┌──────────────────────┐
               └────────────────────────────▶│ The platen motor is defective. │
                                              └──────────────────────┘
```
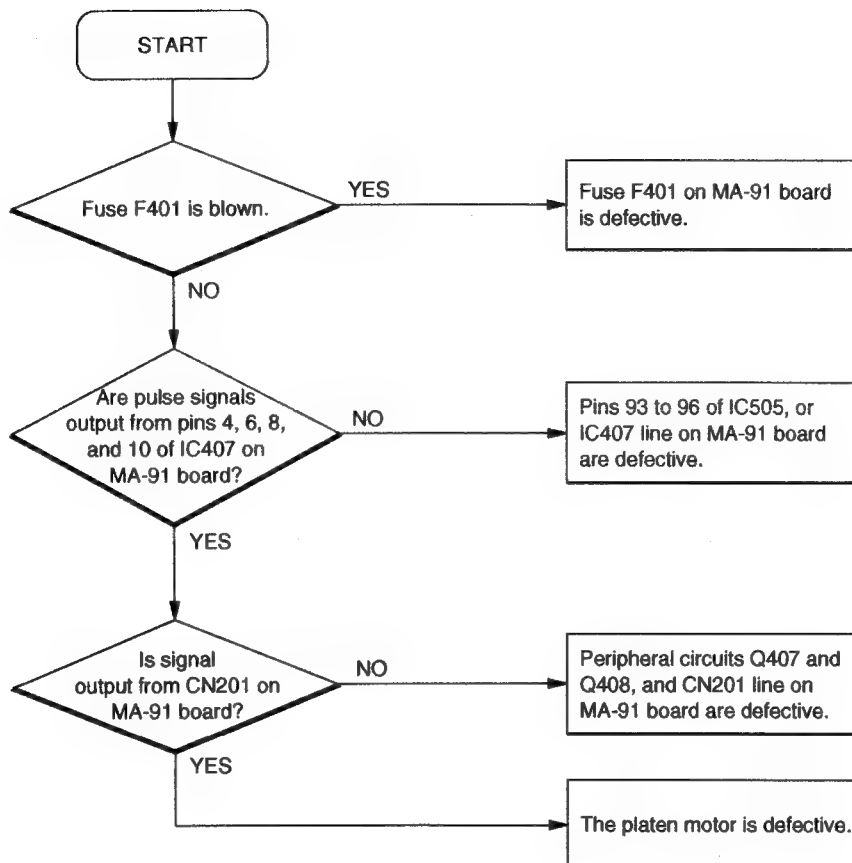
5-9. DOOR (OPENING & CLOSING) IS OUT OF ORDER

```
                    ┌─────────────┐
                    │    START    │
                    └──────┬──────┘
                           │
                           ▼
                    ╱─────────────╲                      ┌──────────────────────────┐
                   ╱   Is signal    ╲         NO          │ The front panel or pin 17 of │
                  ╱ input to pin 65  ╲ ──────────────────▶│ CN207 on MA-91 board is      │
                  ╲  of IC201 on     ╱                     │ defective.                   │
                   ╲  MA-91 board?  ╱                      └──────────────────────────┘
                    ╲──────┬──────╱
                       YES │
                           ▼
                    ╱─────────────╲                      ┌──────────────────────────┐
                   ╱               ╲         NO           │ Pins 99 and 100 of IC505, or │
                  ╱  Does door motor ╲ ──────────────────▶│ IC403 and Q404 line on       │
                  ╲    operate?      ╱                     │ MA-91 board are defective.   │
                   ╲               ╱                       └──────────────────────────┘
                    ╲──────┬──────╱
                       YES │
                           ▼
                    ╱─────────────╲                      ┌──────────────────────────┐
                   ╱   Are signals   ╲        NO          │ PH402 and PH401 on SE-442    │
                  ╱ from sensor avail- ╲─────────────────▶│ board, and the SE-441 board  │
                  ╲ able at pins 17 and╱                   │ line are defective.          │
                   ╲ 19 of CN204 on   ╱                    └──────────────────────────┘
                    ╲  MA-91 board?  ╱
                    ╲──────┬──────╱
                       YES │
                           ▼                              ┌──────────────────────────┐
                           └─────────────────────────────▶│ IC405 to pins 84 and 85 of   │
                                                          │ IC505 on MA-91 board are     │
                                                          │ defective.                   │
                                                          └──────────────────────────┘
```

SECTION 6
SEMICONDUCTOR PIN ASSIGNMENTS

Semiconductors of which functions are equivalent are described here. For parts replacement, refer to the section of Spare Parts in this manual. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

ここに記載されている半導体は，それぞれの機能を等価的に表したものです。　なお，互換性のない型名を併記していることがありますので，部品を交換するときは，Spare Partsの章を参照してください。
等価回路はICメーカーのデータブックに従いました。

DIODE, LED, TRANSISTOR

DIODE

—TOP VIEW—
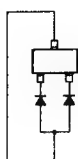
1S2836
1S2836-T1

—TOP VIEW—
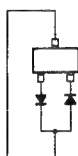
1SS302
1SS302-TE85L

10E-2

LED

GL4800

TLN225

TRANSISTOR

—TOP VIEW—
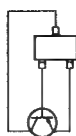
2SA812-T1-M5M6
2SA1162G

—TOP VIEW—
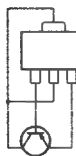
2SB798-DL
2SB798-T1DL

—TOP VIEW—
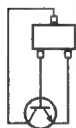
2SC1623
2SC1623-T1-L5L6

2SD992-Z
2SD992-Z-E2

1K
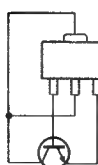
—TOP VIEW—

2SD999-CLCK
2SD999-T1-CLCK

—TOP VIEW—
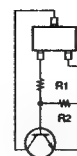
DTC124EKA-T146
(R1, R2=22 K)

R1
R2
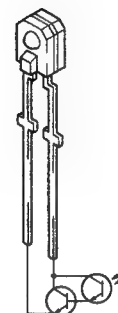
PT493F
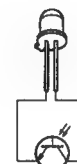
PT501A

—TOP VIEW—

XN4402-(TX)

6 1
5 2
4 3

6 1
5 2
4 3

OTHERS

IC

—TOP VIEW—

XN4501
XN4501-TW
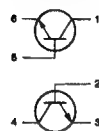
RPI-352

—TOP VIEW—

XN4601
XN4601-TW
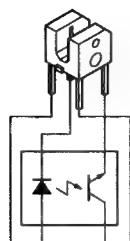
BA6219B (ROHM)

REVERSIBLE MOTOR DRIVER
—SIDE VIEW—

GND   Vcc1 Vcc2

Vout 1 Vz1 VR F IN R IN Vz2 Vout 2

F IN — CONTROL LOGIC — PRE DRIVER — MOTOR DRIVER — Vz1, Vout 1, Vout 2, Vz2
R IN
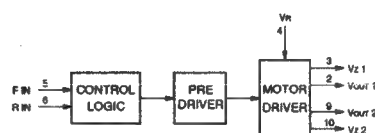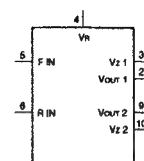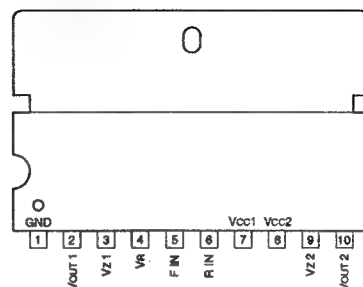
CXD8932Q (SONY)

C-MOS GATE ARRAY
—TOP VIEW—
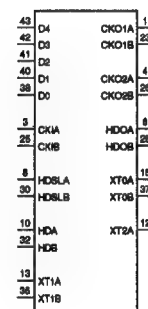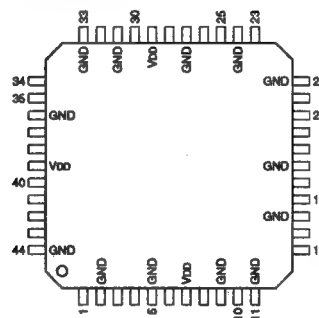
PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	O	CKO1A	12	O	XT2A	23	O	CKO1B	34	—	NC
2	—	GND	13	I	XT1A	24	—	GND	35	I	XT1B
3	I	CKIA	14	—	GND	25	I	CKIB	36	—	GND
4	O	CKO2A	15	O	XT0A	26	O	CKO2B	37	O	XT0B
5	—	GND	16	—	NC	27	—	GND	38	I	D0
6	O	HDOA	17	—	GND	28	O	HDOB	39	—	VDD
7	—	VDD	18	—	NC	29	—	VDD	40	I	D1
8	I	HDSLA	19	—	NC	30	I	HDSLB	41	I	D2
9	—	GND	20	—	NC	31	—	GND	42	I	D3
10	I	HDA	21	—	NC	32	I	HDB	43	I	D4
11	—	GND	22	—	GND	33	—	GND	44	—	GND

CXD8726R (SONY)

C-MOS FRAME MEMORY CONTROL
—TOP VIEW—

CXP50P116Q-3-029 (SONY)

C-MOS 4-BIT SINGLE CHIP MICROCOMPUTER
—TOP VIEW—

CXD8726R Pin Assignment

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	—	GND	53	—	VDD	105	—	GND	157	—	VDD
2	—	GND	54	I/O	DIOA2	106	—		158	I	TEST9
3	I	C SYNCB	55	I/O	DIOA3	107	O	WE0B	159	I	TEST10
4	O	EXTHB	56	I/O	DIOA4	108	O	WE1B	160	I	TEST11
5	O	EXTVB	57	I/O	DIOA5	109	—	GND	161	I	TEST12
6	O	CLUMPB	58	I/O	DIOA6	110	O	HCLK	162	I	TEST13
7	I	CL SEL0	59	I/O	DIOA7	111	O	DR0	163	I	TEST14
8	I	CL SEL1	60	—	GND	112	O	STBB	164	I	TEST15
9	I	HDO0	61	I/O	DIOA8	113	O	HDATA9	165	I	TEST16
10	—	VDD	62	I/O	DIOA9	114	I	HDATA8	166	I	TEST17
11	—	GND	63	I/O	DIOA10	115	I	HDATA7	167	I	TEST18
12	I	DCKI0	64	I/O	DIOA11	116	O	HDATA6	168	I	TEST19
13	—	GND	65	I/O	DIOA12	117	O	HDATA5	169	—	GND
14	I	DCKI1	66	I/O	DIOA13	118	O	HDATA4	170	—	VDD
15	—	GND	67	I/O	DIOA14	119	O	HDATA3	171	O	BLKB TST
16	O	DCKO0	68	I/O	DIOA15	120	O	HDATA2	172	O	DO TST0
17	—	GND	69	—	GND	121	O	HDATA1	173	O	DO TST1
18	O	DCKO1	70	I/O	DIOB0	122	O	HDATA0	174	O	DO TST2
19	—	GND	71	I/O	DIOB1	123	—	GND	175	O	DO TST3
20	—	VDD	72	I/O	DIOB2	124	—		176	O	DO TST4
21	I	H SYNCB	73	I/O	DIOB3	125	I	FETCHB	177	O	DO TST5
22	I	HDO1	74	I/O	DIOB4	126	I	FTSTOPB	178	O	DO TST6
23	I	MCLK	75	I/O	DIOB5	127	O	FECHINGB	179	O	DO TST7
24	—	GND	76	I/O	DIOB6	128	I	CPSTOPB	180	O	P1B TST
25	O	SCLK	77	I/O	DIOB7	129	I	CPSTOPB	181	O	P2B TST
26	—	GND	78	—	VDD	130	—	VDD	182	—	GND
27	—	VDD	79	—	GND	131	—	GND	183	—	VDD
28	O	HTO	80	I/O	DIOB8	132	O	COPYINGB	184	O	P3B TST
29	—	GND	81	I/O	DIOB9	133	O	INT VB	185	O	PRTB TST
30	I	DCKSEL	82	I/O	DIOB10	134	I	MTPULSE	186	O	WSAD TST
31	I	AD07	83	I/O	DIOB11	135	—	NC	187	—	WSB TST
32	I	AD06	84	I/O	DIOB12	136	O	REGSEL0	188	O	OD TSO14
33	I	AD05	85	I/O	DIOB13	137	O	REGSEL1	189	O	HS TSO15
34	I	AD04	86	I/O	DIOB14	138	O	REGLDB	190	I	TEB
35	I	AD03	87	I/O	DIOB15	139	O	REGENB	191	O	TIN
36	I	AD02	88	—	VDD	140	I	SCK	192	—	GND
37	I	AD01	89	—	GND	141	I	SI	193	—	GND
38	I	AD00	90	O	DADR0	142	—	GND	194	O	GM TOUT
39	—	GND	91	O	DADR1	143	—	VDD	195	O	VC TOUT
40	I	AD17	92	O	DADR2	144	I	RESB	196	O	IP TOUT
41	I	AD16	93	O	DADR3	145	—	GND	197	O	HD TOUT0
42	I	AD15	94	O	DADR4	146	I	TEST0	198	O	HD TOUT1
43	I	AD14	95	O	DADR5	147	I	TEST1	199	O	HD TOUT2
44	I	AD13	96	O	DADR6	148	I	TEST2	200	O	HD TOUT3
45	I	AD12	97	O	DADR7	149	I	TEST3	201	O	HD TOUT4
46	I	AD11	98	O	DADR8	150	I	TEST4	202	O	HD TOUT5
47	I	AD10	99	O	DADR9	151	I	TEST5	203	O	HD TOUT6
48	—	GND	100	—	GND	152	I	TEST6	204	O	HD TOUT7
49	I/O	DIOA0	101	O	RASB	153	I	TEST7	205	O	HD TOUT8
50	I/O	DIOA1	102	O	CASB	154	I	TEST8	206	O	HD TOUT9
51	—	GND	103	O	OEB	155	—	GND	207	O	VF
52	—	GND	104	—	VDD	156	—	VDD	208	—	VDD

CXP50P116Q-3-029 Pin Assignment

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	O	S4/PG0	21	O	T7	41	I/O	PB2/AD6	61	I	PY2/WP
2	O	S5/PG1	22	O	T6	42	I/O	PB3/AD7	62	I	PY3/RMC
3	O	S6/PG2	23	O	T5	43	I	EC	63	I/O	PD0
4	O	S7/PG3	24	O	T4	44	I/O	PX0/SC	64	I/O	PD1
5	O	S8/PK0	25	O	T3	45	I/O	PX1/SO	65	I/O	PD2
6	O	S9/PK1	26	O	T2	46	I/O	PX2/SI	66	I/O	PD3
7	O	S10/PK2	27	O	T1	47	I/O	PA0	67	I/O	PC0
8	O	S11/PK3	28	O	T0	48	I/O	PA1	68	I/O	PC1
9	O	S12/PJ0	29	I	INT	49	I/O	PA2	69	I/O	PC2
10	O	S13/PJ1	30	O	TX	50	I/O	PA3	70	I/O	PC3
11	O	S14/PJ2	31	I	TEX	51	I/O	PF0	71	—	GND
12	O	S15/PJ3	32	I/O	RST	52	I/O	PF1	72	O	XTAL
13	O	S16/T15	33	—	VPP	53	I/O	PF2	73	—	NC
14	O	S17/T14	34	—	VDD	54	O	PF3	74	I	EXTAL
15	O	S18/T13	35	I/O	PI0/AD0	55	I/O	PE0	75	I	VREF
16	O	S19/T12	36	I/O	PI1/AD1	56	I/O	PE1	76	O	VFDP
17	O	S20/T11	37	I/O	PI2/AD2	57	I/O	PE2	77	O	PH0/S0
18	O	S21/T10	38	I/O	PI3/AD3	58	I/O	PE3	78	O	PH1/S1
19	O	S22/T9	39	I/O	PB0/AD4	59	O	PY0	79	O	PH2/S2
20	O	S23/T8	40	I/O	PB1/AD5	60	O	PY1/PWM	80	O	PH3/S3

INPUT

AD0 - AD7	: ANALOG VOLTAGE
EC	: EVENT COUNT
EXTAL	: EXTERNAL CLOCK OSCILLATOR
INT	: INTERRUPT
PX0	: PORT X
PX1	: PORT X
PX2	: PORT X
PY2	: PORT Y
PY3	: PORT Y
RMC	: REMOTE CONTROL
SI	: SERIAL INTERFACE
TEX	: 32 kHz CLOCK
VREF	: VOLTAGE REFERENCE FOR RESET
WP	: WAKE UP

OUTPUT

PG0 - PG3	: PORT G
PH0 - PH3	: PORT H
PJ0 - PJ3	: PORT J
PK0 - PK3	: PORT K
PWM	: PWM GENERATOR
PY0	: PORT Y
PY1	: PORT Y
S0 - S23	: SEGMENT SIGNAL
SO	: SERIAL INTERFACE
T0 - T15	: TIMING SIGNAL FOR FLUORESCENT DISPLAY
TX	: 32 kHz CLOCK
VFDP	: VOLTAGE FOR FLUORESCENT DISPLAY
XTAL	: EXTERNAL CLOCK OSCILLATOR

INPUT/OUTPUT

PA0 - PA3	: PORT A
PB0 - PB3	: PORT B
PC0 - PC3	: PORT C
PD0 - PD3	: PORT D
PE0 - PE3	: PORT E
PF1 - PF3	: PORT F
PI0 - PI3	: PORT I
RST	: RESET
SC	: SERIAL INTERFACE CLOCK

DS1000Z-50 (DALLAS SEMICONDUCTOR)
DS1000Z-50(TE2)
DS1000Z-100 (DALLAS SEMICONDUCTOR)FLAT PACKAGE
DS1000Z-100(TE2)

C-MOS DELAY LINE
—TOP VIEW—

INPUT	1		VDD	8
TAP2 OUT	2		TAP1 OUT	7
TAP4 OUT	3		TAP2 OUT.	6
	4	GND	TAP5 OUT	5

1	INPUT		TAP1	7
			TAP2	2
			TAP3	6
			TAP4	3
			TAP5	5

INPUT ▷ — 20% — 20% — 20% — 20% — 20%
TAP1 TAP2 TAP3 TAP4 TAP5
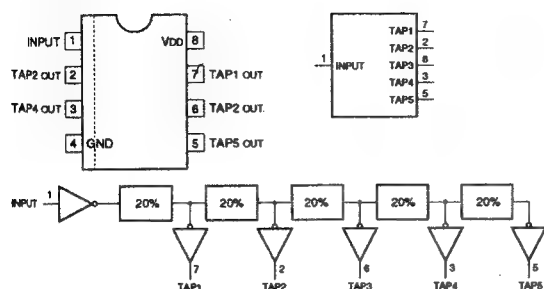
TYPE. NO.	DELAY TIME (ns)				
	TAP1	TAP2	TAP3	TAP4	TAP5
DS1000M-50	10	20	30	40	50
DS1000M-60	12	24	36	48	60
DS1000M-75	15	30	45	60	75
DS1000M-100	20	40	60	80	100
DS1000M-125	25	50	75	100	125
DS1000M-150	30	60	90	120	150
DS1000M-175	35	70	105	140	175
DS1000M-200	40	80	120	160	200
DS1000M-250	50	100	150	200	250
DS1000M-500	100	200	300	400	500
DS1000Z-25	5	10	15	20	25
DS1000Z-100	20	40	60	80	100

HA11465A (HITACHI)

NTSC COLOR TV VIDEO AMPLIFIER
—TOP VIEW—

AP	: APERTURE
BLK	: BLANKING
BRT	: BRIGHTNESS
CNTR	: CONTRAST
CONT	: CONTROL
SYNC SEP	: SYNCHRONIZATION PULSE SEPARATION
V.AMP	: VIDEO AMPLIFIER

HD14053BFP (HITACHI)FLAT PACKAGE
MC14053BF-T2

C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS
—TOP VIEW—

X1 I/O	1		VDD	16
X0 I/O	2		XC I/O	15
Y1 I/O	3		ZC I/O	14
YC I/O	4		Z1 I/O	13
Y0 I/O	5		Z0 I/O	12
EN IN	6		AZ I/O	11
	7	VEE	AX I/O	10
	8	GND	AY I/O	9

CONT. INPUTS		ON
EN	A (X, Y, Z)	CHANNEL
0	0	0
0	1	1
1	x	OPEN

0 : LOW LEVEL
1 : HIGH LEVEL
x : DON'T CARE

LM1201MX (NS)FLAT PACKAGE

VIDEO AMPLIFIER
—TOP VIEW—

	1	GND1	VIDEO IN	16
CLAMP CAP IN	2		Vcc1	15
VREF IN	3		CONTRAST CAP	14
CONTRAST IN	4		CONTRAST CAP	13
CLAMP GATE IN	5		Vcc2	12
CLAMP (+) IN	6		DRIVE OUT	11
	7	GND2	Vcc3	10
VIDEO OUT	8		CLAMP (−) IN	9

HD6473042F12 (HITACHI)

C-MOS 16-BIT MICRO PROCESSOR
—TOP VIEW—
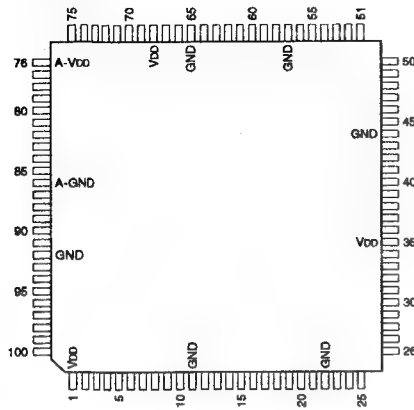
PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	—	VDD	26	I/O	P47/D7	51	I/O	P26/A14	76	—	A-VDD
2	I/O	PB0/TIOCA3/TP8	27	I/O	P30/D8	52	I/O	P27/A15	77	I	VREF
3	I/O	PB1/TIOCB3/TP9	28	I/O	P31/D9	53	I/O	P50/A16	78	I	P70/AN0
4	I/O	PB2/TIOCA4/TP10	29	I/O	P32/D10	54	I/O	P51/A17	79	I	P71/AN1
5	I/O	PB3/TIOCB4/TP11	30	I/O	P33/D11	55	I/O	P52/A18	80	I	P72/AN2
6	I/O	PB4/TOCXA4/TP12	31	I/O	P34/D12	56	I/O	P53/A19	81	I	P73/AN3
7	I/O	PB5/TOCXB4/TP13	32	I/O	P35/D13	57	—	GND	82	I	P74/AN4
8	I/O	PB6/DREQ0/TP14	33	I/O	P36/D14	58	I/O	P60/WAIT	83	I	P75/AN5
9	I/O	PB7/ADTRG0/DREQ1/TP15	34	I/O	P37/D15	59	I/O	P61/BREQ	84	I/O	P76/AN6/DA0
10	O	RESO	35	—	VDD	60	I/O	P62/BACK	85	I/O	P77/AN7/DA1
11	—	GND	36	I/O	P10/A0	61	O	e	86	—	A-GND
12	I/O	P90/TXD0	37	I/O	P11/A1	62	I	STBY	87	I/O	P80/RFSH/IRQ0
13	I/O	P91/TXD1	38	I/O	P12/A2	63	I	RES	88	I/O	P61/CS3/RAS/IRQ1
14	I/O	P92/RXD0	39	I/O	P13/A3	64	I	NMI	89	I/O	P62/CS2/IRQ2
15	I/O	P93/RXD1	40	I/O	P14/A4	65	—	GND	90	I/O	P63/CS1/IRQ3
16	I/O	P94/IRQ4/SCK0	41	I/O	P15/A5	66	I	EXTAL	91	I/O	P84/CS0
17	I/O	P95/IRQ5/SCK1	42	I/O	P16/A6	67	I	XTAL	92	—	GND
18	I/O	P40/D0	43	I/O	P17/A7	68	—	VDD	93	I/O	PA0/TP0/TEND0/TCLKA
19	I/O	P41/D1	44	—	GND	69	I/O	P63/AS	94	I/O	PA1/TP1/TEND1/TCLKB
20	I/O	P42/D2	45	I/O	P20/A8	70	I/O	P64/RD	95	I/O	PA2/TP2/TIOCA0/TCLKC
21	I/O	P43/D3	46	I/O	P21/A9	71	I/O	P65/HWR	96	I/O	PA3/TP3/TIOCB0/TCLKD
22	—	GND	47	I/O	P22/A10	72	I/O	P66/LWR	97	I/O	PA4/TP4/TIOCA1/A23
23	I/O	P44/D4	48	I/O	P23/A11	73	I	MD0	98	I/O	PA5/TP5/TIOCB1/A22
24	I/O	P45/D5	49	I/O	P24/A12	74	I	MD1	99	I/O	PA6/TP6/TIOCA2/A21
25	I/O	P46/D6	50	I/O	P25/A13	75	I	MD2	100	I/O	PA7/TP7/TIOCB2/A20
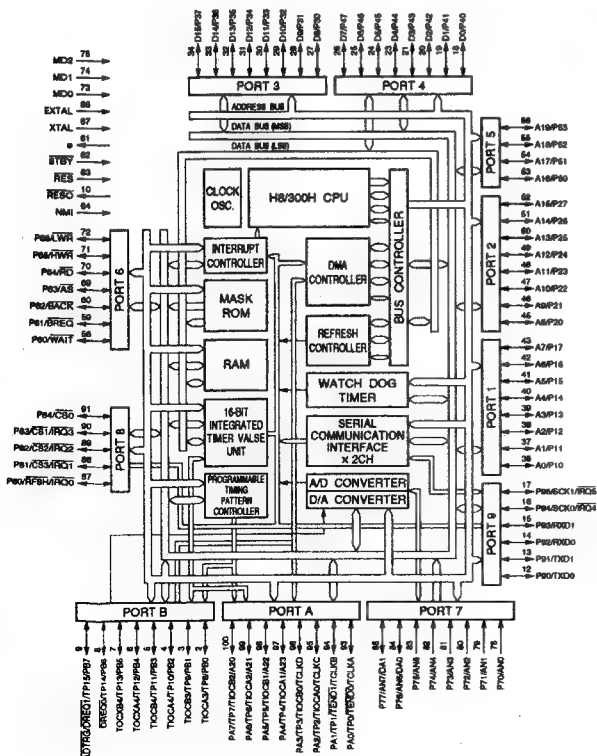
LM358PS (TI) FLAT PACKAGE
LM358PS-E20

DUAL OPERATIONAL AMPLIFIERS
(SINGLE-SUPPLY TYPE)
—TOP VIEW—
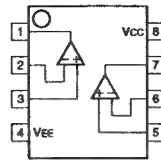
LM393PS (TI) FLAT PACKAGE
LM393PS-E20

DUAL VOLTAGE COMPARATORS
—TOP VIEW—
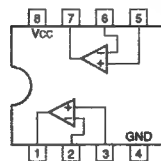
M54543L (MITSUBISHI)

BI-DIRECTIONAL MOTOR DRIVER
—SIDE VIEW—
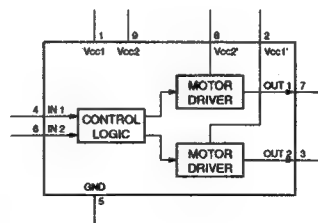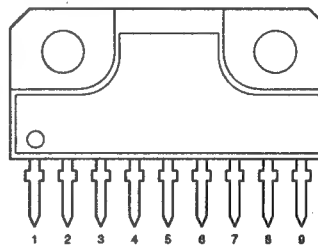
IN		OUT		MODE
1	2	1	2	
0	0	Z	Z	NO OPERATION
1	0	1	0	ROTATION
0	1	0	1	REVERSE ROTATION
1	1	0	0	BRAKE

0 ; LOW LEVEL
1 ; HIGH LEVEL
Z ; HIGH IMPEDANCE

M62354FP-T1 (MITSUBISHI)

C-MOS 8-BITS 6 CHANNEL D/A CONVERTER
—TOP VIEW—
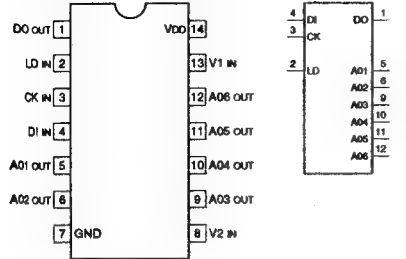
Pin	Description
A01 - A06	8-BITS D/A OUTPUTS
CK	CLOCK INPUT
DI	12-BITS SERIAL DATA INPUT
DO	BIT DATA OF MSB OF 12-BITS SHIFT REGISTER OUTPUT
LD	LOAD INPUT
V1	REFERENCE VOLTAGE (UPPER) +3.5 in +5 (VDD) V
V2	REFERENCE VOLTAGE (LOWER) 0 to +1.5 (VDD−3.5) V

MB40C568HPF-ER (FUJITSU)

C-MOS IMAGE PROCESSING A/D CONVERTER
—TOP VIEW—

INPUT

ANA	:	ANALOG SIGNAL
CLK	:	CLOCK
VRB	:	REFERENCE VOLTAGE (+1 V)
VRT	:	REFERENCE VOLTAGE (+3 V)

OUTPUT

D1 - D8	:	DIGITAL SIGNAL
VREFB	:	REFERENCE VOLTAGE (+1 V)
VREFT	:	REFERENCE VOLTAGE (+3 V)
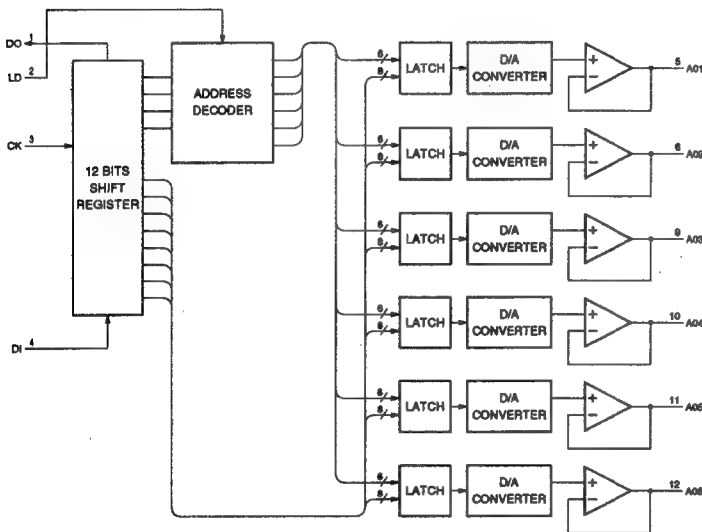
D0	D1	D2	D3	D4	D5	D6	D7	D/A OUTPUT
0	0	0	0	0	0	0	0	(V1−V2) / 256 × 1 + V2
1	0	0	0	0	0	0	0	(V1−V2) / 256 × 2 + V2
0	1	0	0	0	0	0	0	(V1−V2) / 256 × 3 + V2
1	1	0	0	0	0	0	0	(V1−V2) / 256 × 4 + V2
:	:	:	:	:	:	:	:	:
0	1	1	1	1	1	1	1	(V1−V2) / 256 × 255 + V2
1	1	1	1	1	1	1	1	V1

D8	D9	D10	D11	ADDRESS SELECT
0	0	0	0	×
0	0	0	1	A01
0	0	1	0	A02
0	0	1	1	A03
0	1	0	0	A04
0	1	0	1	A05
0	1	1	0	A06
0	1	1	1	×
1	×	×	×	×

0 ; LOW LEVEL
1 ; HIGH LEVEL
× ; DON'T CARE

NJM2234M (JRC) FLAT PACKAGE
NJM2234M(T1)

3-INPUT VIDEO SIGNAL SWITCH
—TOP VIEW—

CTL1	CTL2	V
0	0	V1
1	0	V2
×	1	V3

0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE
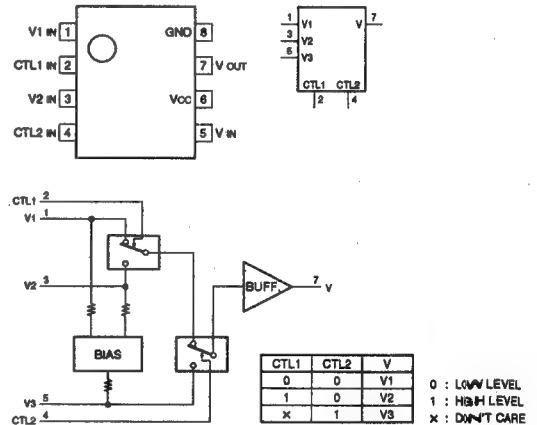
PST600DMT-T1 (MITSUMI) Vs=4.2 V

VOLTAGE DETECTOR
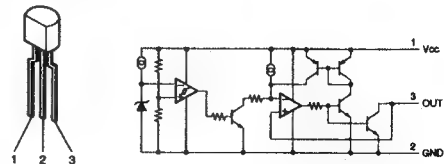
RPI-5100 (ROHM)
RPI-5200 (ROHM)

PHOTO INTERRUPTER
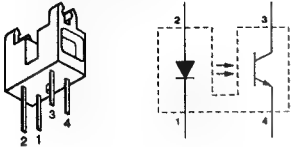
SN74HC14ANS (TI) FLAT PACKAGE
SN74HC14ANS-E05

C-MOS HEX SCHMITT TRIGGER INVERTERS
—TOP VIEW—

$A \;\triangleright\!\!\circ\; Y = \overline{A} \quad \triangleright\!\!\circ\; Y$

$Y = \overline{A}$

A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL
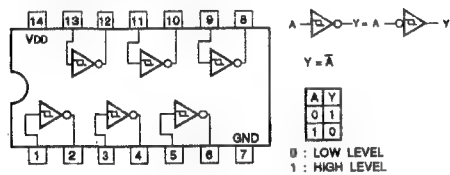
ST24C02FM6TR (SGS)

C-MOS VCR CHANNEL MEMORY
—TOP VIEW—

1	E0 IN		VDD	8
2	E1 IN		MODE IN	7
3	E2 IN		SCL IN	6
4	GND		SDA IN/OUT	5

1	E0	SDA	5
2	E1		
3	E2		
6	SCL		
7	MODE		
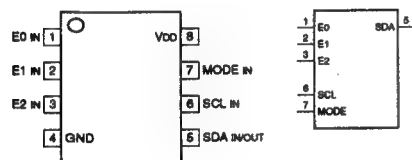
INPUT
E0 - E2 : CHIP ENABLE
MODE : MULTIBYTE/PAGE WRITE MODE
SCL : SERIAL CLOCK

INPUT/OUTPUT
SDA : SERIAL DATA ADDRESS

NJM7812FA
TA7812S (TOSHIBA) +12 V (1 A)

POSITIVE VOLTAGE REGULATOR
—FRONT VIEW—

3	INPUT	OUTPUT	1
	COMMON		
	2		

INPUT COMMON OUTPUT
(3) (2) (1)
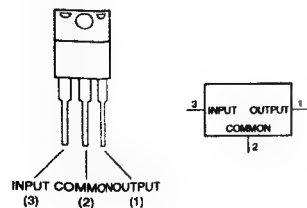
TMS418160A-60DZ (TI)

C-MOS 16 M (1,048,576 × 16)-BIT HIGH SPEED DRAM
—TOP VIEW—

1	VDD	GND	42
2	DQ0	DQ15	41
3	DQ1	DQ14	40
4	DQ2	DQ13	39
5	DQ3	DQ12	38
6	VDD	GND	37
7	DQ4	DQ11	36
8	DQ5	DQ10	35
9	DQ6	DQ9	34
10	DQ7	DQ8	33
11	NC	NC	32
12	NC	LCAS	31
13	$\overline{W}$	UCAS	30
14	$\overline{RAS}$	$\overline{OE}$	29
15	NC	A9	28
16	NC	A8	27
17	A0	A7	26
18	A1	A6	25
19	A2	A5	24
20	A3	A4	23
21	VDD	GND	22

17	A0	DQ 0	2
18	A1	DQ 1	3
19	A2	DQ 2	4
20	A3	DQ 3	5
23	A4	DQ 4	7
24	A5	DQ 5	8
25	A6	DQ 6	9
26	A7	DQ 7	10
27	A8	DQ 8	33
28	A9	DQ 9	34
		DQ10	35
		DQ11	36
30	UCAS	DQ12	38
31	LCAS	DQ13	39
14	RAS	DQ14	40
		DQ15	41

| | OE | W | |
| | 29 | 13 | |

A0 - A9 : ADDRESS INPUTS
DQ0 - DQ15 : DATA INPUTS/OUTPUTS
$\overline{LCAS}$, $\overline{UCAS}$: COLUMN ADDRESS CONTROL INPUTS
$\overline{RAS}$: ROW ADDRESS CONTROL INPUT
$\overline{OE}$: OUTPUT ENABLE INPUT
$\overline{W}$: WRITE ENABLE INPUT

SECTION 7
SPARE PARTS

7-1. NOTES ON REPAIR PARTS

(1) Safety Related Components Warning
Components marked ⚠ are critical to safe operation.
Therefore, specified parts should be used in the case of
replacement.

(2) Standardization of Parts
Repair parts supplied from Sony Parts Center may not
be always identical with the parts which actually in use
due to "accommodating the improved. parts and/or
engineering changes" or "standardization of genuine
parts".
This manual's exploded views and electrical spare parts
list are indicating the part numbers of "the standardized
genuine parts at present".

(3) Stock of Parts
Parts marked with "o" SP (Supply Code) column of the
spare parts list are not normally required for routine
service work. Orders for parts marked with "o" will be
processed, but allow for additional delivery time.

(4) Units for Capacitors, Inductors and Resistors
The following units are assumed in schematic diagrams,
electrical parts list and exploded views unless otherwise
specified.

    Capacitors : µF
    Inductors   : µH
    Resistors   : Ω

7-1. 補修部品注意事項

(1) 安全重要部品
⚠警告
⚠印のついた部品は安全性を維持するために重要な部品
です。したがって，交換する時は必ず指定の部品を使っ
てください。

(2) 部品の共通化
ソニーから供給される部品は，セットに実装されている
ものと異なることがあります。これは部品の共通化，改
良等によるものです。
分解図や電気部品表には現時点での共通化された部品が
記載されています。

(3) 部品の在庫
部品表のSP (Supply code) 欄に "o" で示される部品は交
換頻度が低い部品ですので在庫していないことがあり，
納期が長くなることがあります。

(4) コンデンサ，インダクタ，抵抗の単位
回路図，分解図，電気部品表中，特に明記したものを除
き，下記の単位は省略されています。
    コンデンサ : µF
    インダクタ : µH
    抵抗   : Ω

7-2. EXPLODED VIEW

Ornamental Block & Mechanical Block

No.	Part No.	SP	Description
1	A-8318-909-A	o	MECHANICAL BLOCK ASSY
2	X-3604-602-1	o	ASSY, LCD SUPPORT
3	X-3604-900-1	s	ASSY, DOOR PANEL (for CE)
	X-3604-902-1	s	ASSY, DOOR PANEL (for J, UC)
4	1-475-785-11	s	PANEL UNIT, FRONT
5	1-475-865-11	s	CUTTER UNIT
6	1-670-203-11	s	PWB, FLEXIBLE PPRINT
7	1-771-458-11	s	KEY, SHEET
8	1-801-886-11	s	LCD MODULE
9	2-431-568-51	o	BUTTON, POWER
10	3-613-791-01	o	COVER, TOP
11	3-614-248-01	s	COVER, LCD
12	3-614-250-01	s	WINDOW, LCD
13	3-614-251-01	o	COVER, DOOR R
14	3-614-252-01	o	COVER, DOOR L
15	3-721-187-01	s	SCREW, BIND TP (S TIGHT) M3x8
16	4-886-821-11	s	SCREW, M3 CASE

Ornamental Block & Switching Regulator
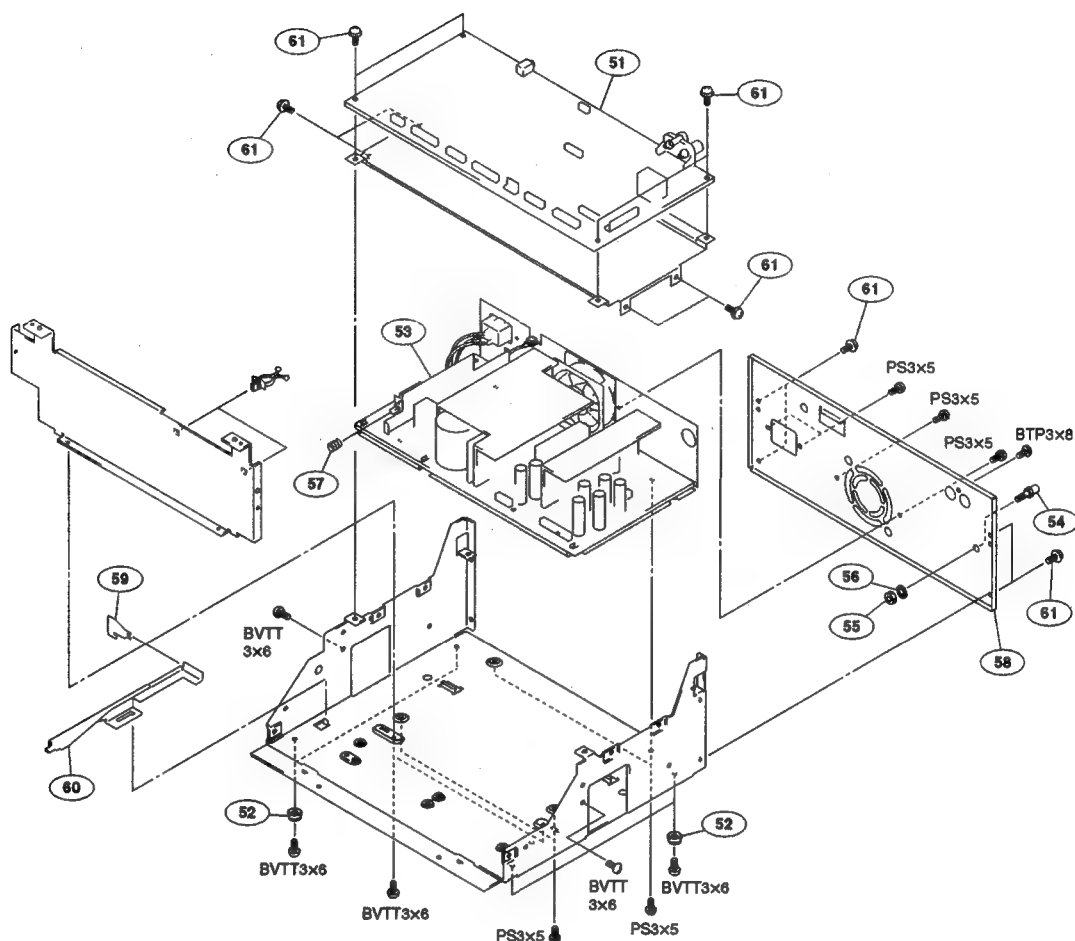
No.	Part No.	SP	Description
51	A-8318-904-A	o	MOUNTED CIRCUIT BOARD, MA-91
52	X-4875-123-1	s	FOOT ASSY, MF
53	⚠ 1-468-320-11	s	REGULATOR, SWITCHING
54	3-175-740-01	o	TERMINAL (for UC, CE)
55	3-175-741-01	o	NUT (for UC, CE)
56	3-175-742-01	o	WASHER (for UC, CE)
57	3-611-601-01	s	SPRING, COMPRESSION
58	3-613-792-01	o	PANEL, REAR (for UC, CE)
	3-613-792-21	o	PANEL, REAR (for J)
59	3-613-821-01	s	STOPPER, ROD
60	3-614-320-01	o	ROD, POWER SW
61	4-034-937-01	s	SCREW (M3), TAPPING

Sub Assy, Top Chassis
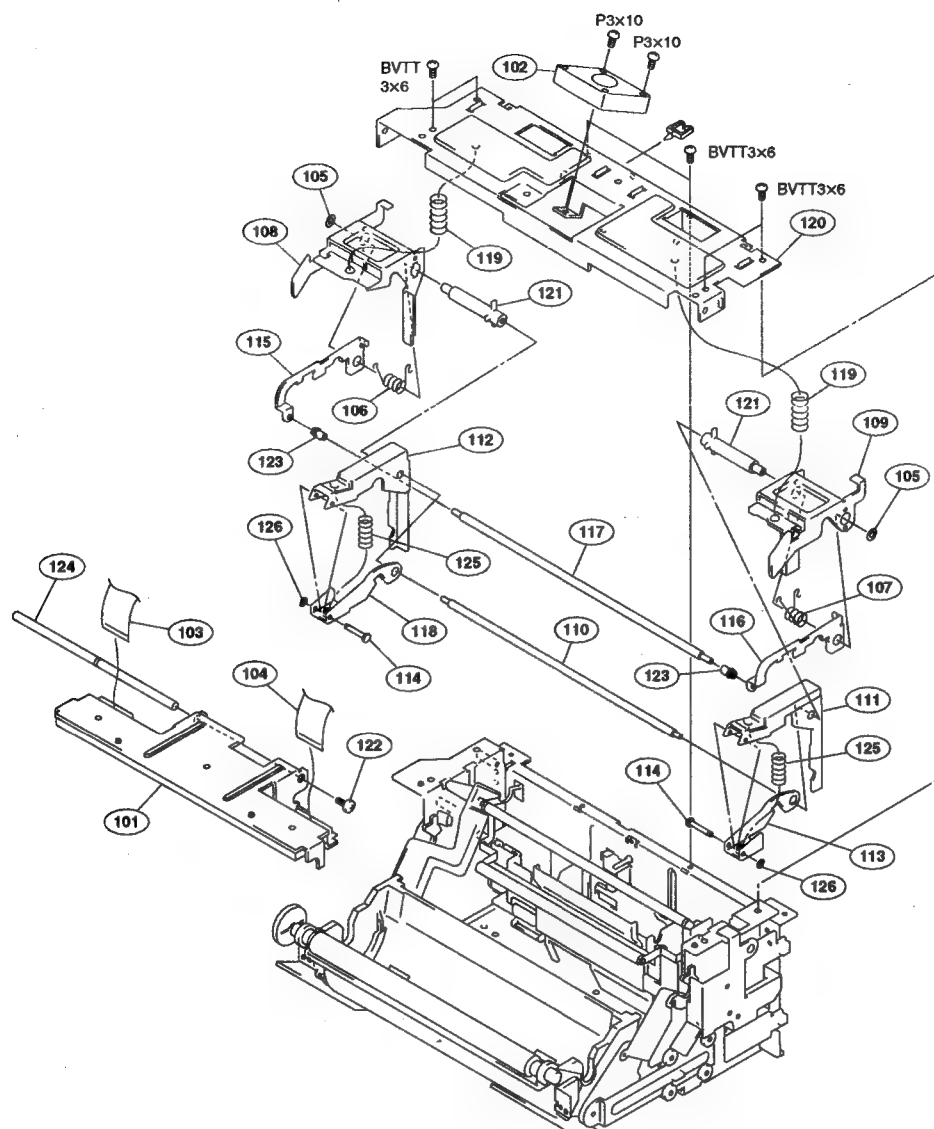
No.	Part No.	SP	Description
101	1-500-556-11	s	HEAD, THERMAL
102	1-763-007-21	s	FAN, DC
103	1-783-743-11	s	WIRE, FLAT TYPE (20 CORE)
104	1-783-744-11	s	WIRE, FLAT TYPE (22 CORE)
105	3-321-813-11	s	WASHER, COTTER POLYETHYLENE
106	3-613-743-02	s	SPRING, HELICAL TORSION D
107	3-613-744-02	s	SPRING, HELICAL TORSION E
108	3-613-745-02	o	ARM, PRESS L
109	3-613-746-02	o	ARM, PRESS R
110	3-613-747-02	o	ROLLER, PRESS F
111	3-613-749-01	o	PLATE, PRESS R
112	3-613-750-01	o	PLATE, PRESS L
113	3-613-751-01	o	PRESS LEVER R

No.	Part No.	SP	Description
114	3-613-753-01	o	SHAFT, HEAD PRESS
115	3-613-754-02	o	PLATE, PRESS ROLLER FL
116	3-613-755-02	o	PLATE, PRESS ROLLER FR
117	3-613-758-01	o	SHAFT, PRESS
118	3-613-759-01	o	LEVER, PRESS L
119	3-613-762-01	s	SPRING, COMPRESSION
120	3-613-766-01	o	CHASSIS, TOP
121	3-613-784-01	s	SPACER, CS
122	3-613-817-01	s	SCREW, SPECIAL M3x6
123	3-613-841-02	s	HOLDER, ROLLER
124	3-613-857-03	o	SHAFT, HEAT SINK
125	3-614-241-01	s	SPRING, COMPRESSION (HEAD)
126	4-926-219-02	s	RING (DIA. 2.3), RETAINING

Feeder Block

to " ∗ a" in next page

to " ∗ b" in next page

TPG B3x6

BVTT 3x5

BVTT3x5

B3x6

TPG B3x6

BVTT 3x5

BVTT3x6   PS3x5

BVTT3x6

PS3x5

PS3x5

BVTT3x6
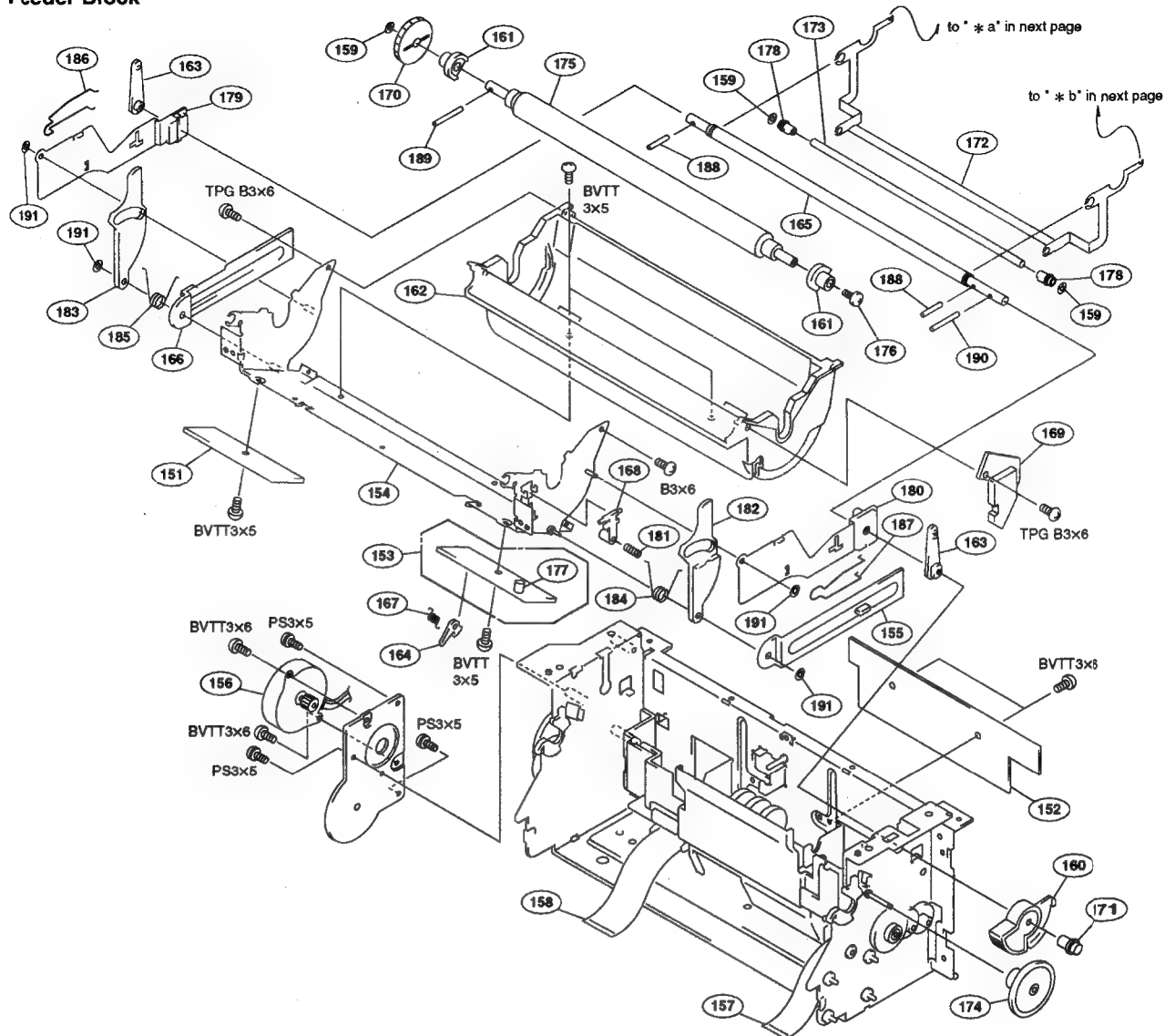
No.	Part No.	SP	Description
151	A-8318-908-A	o	MOUNTED CIRCUIT BOARD, HN-256
152	A-8318-922-A	o	MOUNTED CIRCUIT BOARD, SE-441
153	A-8318-923-A	o	MOUNTED CIRCUIT BOARD, PTC-98
154	X-3604-600-2	s	CHASSIS ASSY, INNER
155	X-3604-605-2	o	ASSY, RAIL R
156	1-763-134-11	s	MOTOR, STEPPING
157	1-783-746-11	o	WIRE, FLAT TYPE (16 CORE)
158	1-783-748-11	s	WIRE, FLAT TYPE (20 CORE)
159	3-321-813-11	s	WASHER, COTTER POLYETHYLENE
160	3-613-714-02	s	GEAR, DOOR DRIVE1
161	3-613-716-02	s	PLATEN BEARING
162	3-613-718-01	s	TRAY, PAPER
163	3-613-722-01	s	BEARING, ARM
164	3-613-723-01	s	PLATE, SENSOR A
165	3-613-724-03	o	SHAFT, CENTER
166	3-613-728-02	o	RAIL L
167	3-613-740-01	s	SPRING, HELICAL TORSION A
168	3-613-756-02	s	ARM, FRICTION
169	3-613-757-01	s	COVER, FR ARM
170	3-613-768-01	s	GEAR, PLATEN
171	3-613-781-01	s	COVER, CENTER SHAFT

No.	Part No.	SP	Description
172	3-613-785-02	o	ARM, PRESS ROLER
173	3-613-786-02	o	SHAFT, PRESS ROLLER
174	3-613-789-01	s	GEAR, DOOR DRIVE2
175	3-613-812-01	s	PLATEN
176	3-613-817-01	s	SCREW, SPECIAL M3x6
177	3-613-826-01	o	HOLDER, LED
178	3-613-841-02	o	HOLDER, ROLLER
179	3-613-853-02	o	ARM L (OUTSERT)
180	3-613-854-02	o	ARM R (OUTSERT)
181	3-613-928-01	s	SPRING, COMPRESSION, 0.3K
182	3-613-965-03	s	PROTECTOR R
183	3-613-966-03	s	PROTECTOR L
184	3-614-244-01	s	SPRING, PROTECTOR R
185	3-614-245-01	s	SPRING, PROTECTOR L
186	3-614-311-01	s	SPRING, DOOR L
187	3-614-312-01	s	SPRING, DOOR R
188	3-649-266-01	s	PIN, PARALLEL
189	3-703-357-05	s	PIN, PARALLEL (DIA. 1.6x16)
190	3-703-358-07	o	PIN, PARALLEL (DIA. 2x18)
191	4-926-219-02	s	RING (DIA. 2.3), RETAINING

Chassis Block Assy, Rear
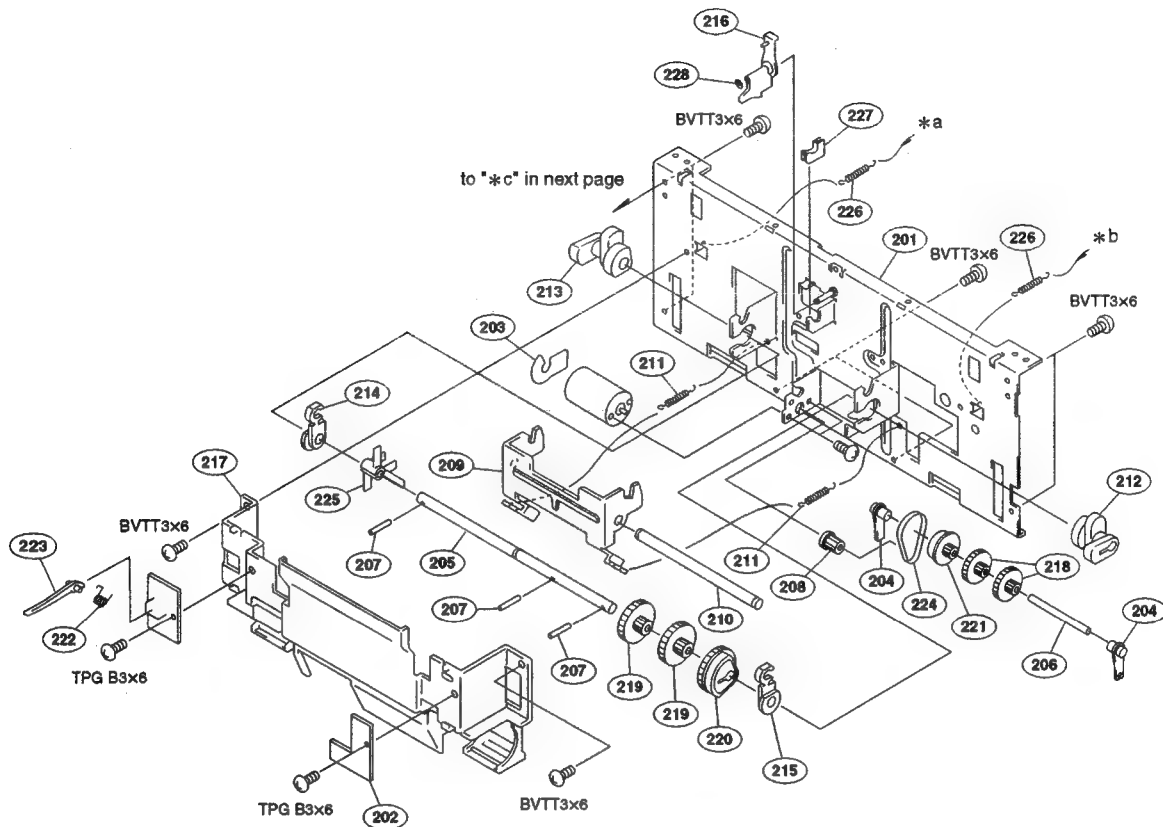
No.	Part No.	SP	Description
201	X-3604-603-2	s	ASSY, REAR CHASSIS
202	1-670-057-11	o	PRINTED WIRING BOARD, SE-485
203	1-670-059-11	o	PRINTED WIRINT BOARD, SU-41
204	3-613-711-01	s	BEARING, HD SHAFT
205	3-613-712-03	s	SHAFT HEAD CAM
206	3-613-713-01	o	SHAFT, HEAD DRIVE
207	3-613-715-01	s	PIN, PARALLEL12
208	3-613-742-01	s	PULLEY17
209	3-613-748-02	o	SUPPORT LEVER
210	3-613-752-01	o	SHAFT, SUPPORT LEVER
211	3-613-763-01	s	SPRING, EXTENSION
212	3-613-764-01	s	CAM, HEAD R
213	3-613-765-01	s	CAM, HEAD L
214	3-613-774-01	s	BEARING (L), HEAD CAM

No.	Part No.	SP	Description
215	3-613-775-01	s	BEARING (R), HEAD CAM
216	3-613-777-01	s	ARM, HEAD RELEASE
217	3-613-782-01	s	GUIDE, PAPER
218	3-613-787-01	s	GEAR, DOOR DRIVE4
219	3-613-790-01	s	GEAR, HEAD DRIVE2
220	3-613-810-01	s	GEAR, HEAD DRIVE1
221	3-613-816-01	s	PULLEY60
222	3-613-818-01	s	SPRING, HELICAL TORSION (PSB)
223	3-613-820-01	s	PLATE, SENSOR B
224	3-613-839-01	s	BELT, 70TN10
225	3-613-875-01	s	FIN, HD SENSOR SHIELD
226	3-614-280-01	s	SPRING, EXTENSION (PR 0.1)
227	3-614-317-01	s	COVER, HEAT SINK SHAFT
228	4-926-219-02	s	RING (DIA. 2.3), RETAINING

Chassis Block & Gear
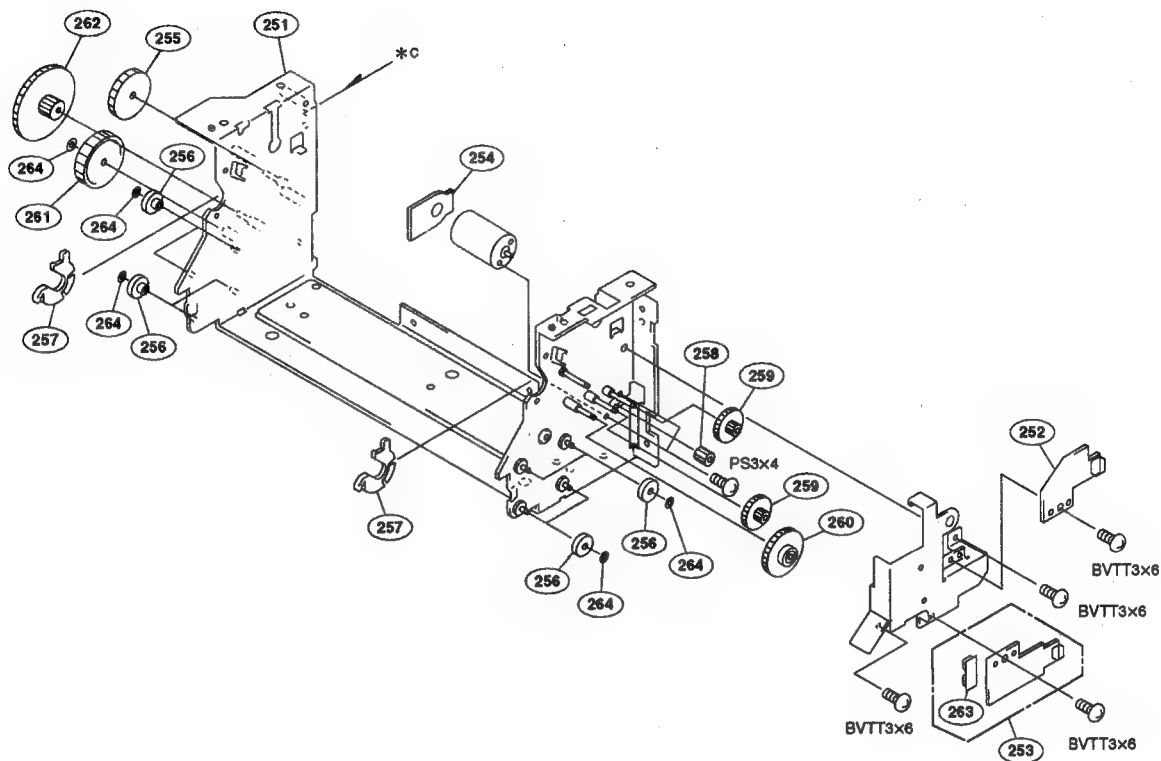
No.	Part No.	SP	Description
251	X-3604-601-1	s	CHASSIS ASSY, MECHANICAL
252	1-670-055-11	o	PRINTED WIRING BOARD, SE-442
253	1-670-058-11	o	PRINTED WIRING BOARD, SE-486
254	1-670-060-11	o	PRINTED WITING BOARD, SU-42
255	3-613-719-01	s	GEAR (B), PLATEN
256	3-613-727-01	s	ROLLER, RAIL
257	3-613-737-01	o	GUIDE, PLATEN
258	3-613-780-01	s	GEAR, DOOR DRIVE5
259	3-613-787-01	s	GEAR, DOOR DRIVE4
260	3-613-788-01	s	GEAR, DOOR DRIVE3
261	3-613-813-01	s	GEAR, IDLE, PLATEN
262	3-613-814-01	s	GEAR A, PLATEN
263	3-613-825-01	o	HOLDER, MENU SENSOR
264	4-926-219-02	s	RING (DIA. 2.3), RETAINING

7-3. ELECTRICAL PARTS LIST

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HN-256 BOARD
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Ref. No.
or Q'ty  Part No.    SP Description

1pc      A-8318-908-A o MOUNTED CIRCUIT BOARD, HN-256

CN101    1-569-478-21 s CONNECTOR, FPC 20P
CN102    1-750-005-11 o CONNECTOR 4P, MALE
CN103    1-766-410-11 s CONNECTOR, FLEXIBLE 17P
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MA-91 BOARD
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Ref. No.
or Q'ty  Part No.    SP Description

1pc      A-8318-904-A o MOUNTED CIRCUIT BOARD, MA-91

BZ401    1-529-080-11 s BUZZER, PIEZOELECTRIC

C1       1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C2       1-126-934-11 s ELECT 220uF 20% 16V
C3       1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C4       1-162-921-11 s CERAMIC, CHIP 33PF 5% 50V
C5       1-135-145-11 s TANTALUM, CHIP 0.47uF 10% 35V

C6       1-104-664-11 s ELECT 47uF 20% 25V
C7       1-126-962-11 s ELECT 3.3uF 20% 50V
C8       1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C9       1-163-220-11 s CERAMIC 3PF 0.25PF 50V
C10      1-162-907-11 s CERAMIC, CHIP 2PF 50V

C11      1-162-910-11 s CERAMIC, CHIP 5PF 0.25PF 50V
C12      1-104-664-11 s ELECT 47uF 20% 25V
C13      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C16      1-162-923-11 s CERAMIC, CHIP 47PF 5% 50V
C17      1-126-925-11 s ELECT 470uF 20% 10V

C18      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C19      1-104-665-11 s ELECT 100uF 20% 25V
C20      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C21      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C22      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V

C23      1-162-970-11 s CERAMIC, CHIP 0.01uF 10% 25V
C24      1-162-966-11 s CERAMIC, CHIP 0.0022uF 10% 50V
C25      1-162-970-11 s CERAMIC, CHIP 0.01uF 10% 25V
C26      1-162-921-11 s CERAMIC, CHIP 33PF 5% 50V
C27      1-126-962-11 s ELECT 3.3uF 20% 50V

C28      1-126-964-11 s ELECT 10uF 20% 50V
C29      1-104-664-11 s ELECT 47uF 20% 25V
C30      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C31      1-104-664-11 s ELECT 47uF 20% 25V
C32      1-162-966-11 s CERAMIC, CHIP 0.0022uF 10% 50V

C33      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C34      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C35      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C36      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C37      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V

C38      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C39      1-126-960-11 s ELECT 1uF 20% 50V
C40      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C41      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C42      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V

C43      1-126-934-11 s ELECT 220uF 20% 16V
C44      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C45      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C48      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C49      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V

C50      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C51      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C52      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C53      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C54      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V

C55      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C56      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C57      1-164-156-11 s CERAMIC, CHIP 0.1uF 25V
C100     1-126-964-11 s ELECT 10uF 20% 50V
C101     1-126-964-11 s ELECT 10uF 20% 50V
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Ref. No.
or Q'ty Part No.   SP Description

Ref. No. or Q'ty	Part No.	SP Description
C102	1-126-964-11	s ELECT 10uF 20% 50V
C103	1-126-964-11	s ELECT 10uF 20% 50V
C104	1-126-964-11	s ELECT 10uF 20% 50V
C105	1-126-964-11	s ELECT 10uF 20% 50V
C106	1-126-964-11	s ELECT 10uF 20% 50V
C108	1-126-964-11	s ELECT 10uF 20% 50V
C109	1-126-964-11	s ELECT 10uF 20% 50V
C110	1-126-964-11	s ELECT 10uF 20% 50V
C112	1-126-964-11	s ELECT 10uF 20% 50V
C201	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C202	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C203	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C204	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C205	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C206	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C207	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C208	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C209	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C210	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C211	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C212	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C215	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C216	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C217	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C218	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C219	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C220	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C221	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C222	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C230	1-104-664-11	s ELECT 47uF 20% 25V
C231	1-104-664-11	s ELECT 47uF 20% 25V
C232	1-104-664-11	s ELECT 47uF 20% 25V
C233	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C234	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C235	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C240	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C258	1-126-964-11	s ELECT 10uF 20% 50V
C259	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C401	1-126-964-11	s ELECT 10uF 20% 50V
C404	1-104-664-11	s ELECT 47uF 20% 25V
C405	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C406	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C407	1-126-964-11	s ELECT 10uF 20% 50V
C408	1-164-227-11	s CERAMIC 0.022uF 10% 25V
C409	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C410	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C411	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C412	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C413	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C414	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C415	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C416	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C417	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C418	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C419	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C420	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C421	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C422	1-104-664-11	s ELECT 47uF 20% 25V
C423	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V

Ref. No.
or Q'ty Part No.   SP Description

Ref. No. or Q'ty	Part No.	SP Description
C430	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C431	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C432	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C433	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C434	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C435	1-126-964-11	s ELECT 10uF 20% 50V
C460	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C461	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C462	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C501	1-126-925-11	s ELECT 470uF 20% 10V
C502	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C503	1-126-925-11	s ELECT 470uF 20% 10V
C504	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C507	1-126-941-11	s ELECT 470uF 20% 25V
C508	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C509	1-126-941-11	s ELECT 470uF 20% 25V
C510	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C511	1-104-664-11	s ELECT 47uF 20% 25V
C512	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C515	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C516	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C517	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C518	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C519	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C520	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C521	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C522	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C523	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C524	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C525	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C526	1-162-917-11	s CERAMIC, CHIP 15PF 5% 50V
C527	1-162-917-11	s CERAMIC, CHIP 15PF 5% 50V
C528	1-126-964-11	s ELECT 10uF 20% 50V
C530	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C531	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C601	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C602	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C603	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C604	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C605	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C606	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C607	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C608	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C609	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C610	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C611	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C612	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C613	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C614	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C615	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C616	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C617	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C618	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C619	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C620	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C621	1-104-664-11	s ELECT 47uF 20% 25V
C622	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C623	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V
C624	1-164-156-11	s CERAMIC, CHIP 0.1uF 25V

Ref. No.
or Q'ty Part No.   SP Description

Ref. No.	Part No.	SP	Description
C625	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C626	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C627	1-104-664-11	s	ELECT 47uF 20% 25V
C628	1-104-664-11	s	ELECT 47uF 20% 25V
C629	1-104-664-11	s	ELECT 47uF 20% 25V
C630	1-104-664-11	s	ELECT 47uF 20% 25V
C631	1-104-664-11	s	ELECT 47uF 20% 25V
C635	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C636	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C640	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C641	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C642	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C643	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C645	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
CN1	1-691-431-11	s	CONNECTOR ASSY, BNC
CN201	1-564-708-11	o	CONNECTOR (SMALL TYPE) 6P, MALE
CN202	1-562-883-11	o	CONNECTOR, FPC 20P, FEMALE
CN204	1-764-783-11	o	HOUSING 26P
CN204	1-774-869-11	o	HOUSING 20P
CN205	1-506-705-11	o	CONNECTOR POST HEADER,ILG (6P)
CN206	1-778-386-11	o	HOUSING 16P
CN207	1-784-979-11	s	HOUSING 22P
CN208	1-564-009-11	o	PIN, CONNECTOR 10P
CN209	1-562-991-11	o	CONNECTOR 22P, FEMALE
CN211	1-564-005-11	o	CONNECTOR 6P, MALE
D1	8-719-820-41	s	DIODE 1SS302
D201	8-719-820-41	s	DIODE 1SS302
D202	8-719-820-41	s	DIODE 1SS302
D203	8-719-820-41	s	DIODE 1SS302
D204	8-719-820-41	s	DIODE 1SS302
D205	8-719-820-41	s	DIODE 1SS302
D206	8-719-820-41	s	DIODE 1SS302
D207	8-719-820-41	s	DIODE 1SS302
D208	8-719-820-41	s	DIODE 1SS302
D209	8-719-820-41	s	DIODE 1SS302
D210	8-719-820-41	s	DIODE 1SS302
D211	8-719-820-41	s	DIODE 1SS302
D212	8-719-820-41	s	DIODE 1SS302
D213	8-719-820-41	s	DIODE 1SS302
D214	8-719-820-41	s	DIODE 1SS302
D215	8-719-820-41	s	DIODE 1SS302
D216	8-719-820-41	s	DIODE 1SS302
D217	8-719-820-41	s	DIODE 1SS302
D218	8-719-820-41	s	DIODE 1SS302
D219	8-719-820-41	s	DIODE 1SS302
D220	8-719-820-41	s	DIODE 1SS302
D222	8-719-820-41	s	DIODE 1SS302
D223	8-719-820-41	s	DIODE 1SS302
D224	8-719-820-41	s	DIODE 1SS302
D225	8-719-820-41	s	DIODE 1SS302
D226	8-719-820-41	s	DIODE 1SS302
D227	8-719-820-41	s	DIODE 1SS302
D228	8-719-820-41	s	DIODE 1SS302
D229	8-719-820-41	s	DIODE 1SS302
D230	8-719-820-41	s	DIODE 1SS302
D231	8-719-820-41	s	DIODE 1SS302
D232	8-719-820-41	s	DIODE 1SS302
D233	8-719-820-41	s	DIODE 1SS302

Ref. No.
or Q'ty Part No.   SP Description

Ref. No.	Part No.	SP	Description
D234	8-719-820-41	s	DIODE 1SS302
D235	8-719-820-41	s	DIODE 1SS302
D236	8-719-820-41	s	DIODE 1SS302
D237	8-719-820-41	s	DIODE 1SS302
D238	8-719-820-41	s	DIODE 1SS302
D401	8-719-820-41	s	DIODE 1SS302
D402	8-719-200-02	s	DIODE 10E-2
D403	8-719-104-34	s	DIODE 1S2836
D404	8-719-104-34	s	DIODE 1S2836
D405	8-719-104-34	s	DIODE 1S2836
D406	8-719-104-34	s	DIODE 1S2836
D408	8-719-104-34	s	DIODE 1S2836
D409	8-719-104-34	s	DIODE 1S2836
D410	8-719-820-41	s	DIODE 1SS302
D411	8-719-820-41	s	DIODE 1SS302
D412	8-719-820-41	s	DIODE 1SS302
D413	8-719-820-41	s	DIODE 1SS302
D414	8-719-820-41	s	DIODE 1SS302
D415	8-719-820-41	s	DIODE 1SS302
D416	8-719-820-41	s	DIODE 1SS302
D417	8-719-820-41	s	DIODE 1SS302
D501	8-719-820-41	s	DIODE 1SS302
D502	8-719-820-41	s	DIODE 1SS302
D503	8-719-820-41	s	DIODE 1SS302
F401	△ 1-532-777-21	s	FUSE, MICRO(SECONDARY) 1.25A 125V
FB501	1-410-397-21	s	FERRITE BEAD INDUCTOR 1.1uH
FB502	1-410-397-21	s	FERRITE BEAD INDUCTOR 1.1uH
FL1	1-409-431-11	s	COIL, TRAP 3.58MHz
FL2	1-409-447-11	s	COIL, TRAP 4.43MHz
IC1	8-759-710-07	s	IC NJM2234M
IC2	8-759-304-10	s	IC HA11465A
IC3	8-759-988-13	s	IC LM393PS
IC4	8-759-983-69	s	IC LM358PS
IC5	8-759-300-71	s	IC MC14053BF
IC6	8-759-296-57	s	IC LM1201MX
IC7	8-759-528-24	s	IC MB40C568HPF-ER
IC8	8-759-528-24	s	IC MB40C568HPF-ER
IC201	8-752-895-14	s	IC CXP50P116Q-3-029
IC202	8-759-354-28	s	IC ST24C02FM6TR
IC203	8-759-178-20	s	IC M62354FP
IC401	8-759-600-24	s	IC M54543L
IC402	8-759-973-95	s	IC BA6219B
IC403	8-759-973-95	s	IC BA6219B
IC404	8-759-983-69	s	IC LM358PS
IC405	8-759-925-80	s	IC SN74HC14ANS
IC406	8-759-925-80	s	IC SN74HC14ANS
IC407	8-759-925-80	s	IC SN74HC14ANS
IC502	8-759-278-46	s	IC PST600DMT-T1
IC503	8-759-231-58	s	IC TA7812S
IC505	8-759-531-76	s	IC HD6473042F12-UP980SYS-V1.0
IC601	8-759-498-91	s	IC CXD8726R
IC602	8-759-486-03	s	IC TMS418160A-60DZ
IC603	8-759-486-03	s	IC TMS418160A-60DZ
IC604	8-759-287-50	s	IC CXD8932Q
IC605	8-759-297-58	s	IC DS1000Z-50
IC606	8-759-359-12	s	IC DS1000Z-100

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Ref. No.
or Q'ty   Part No.   SP Description

J501   1-507-967-11 s JACK

L2   1-410-369-11 s INDUCTOR CHIP 1uH
L3   1-410-369-11 s INDUCTOR CHIP 1uH
L8   1-408-777-00 s INDUCTOR CHIP 10uH
L201   1-408-777-00 s INDUCTOR CHIP 10uH
L202   1-408-777-00 s INDUCTOR CHIP 10uH

L204   1-408-777-00 s INDUCTOR CHIP 10uH
L205   1-408-777-00 s INDUCTOR CHIP 10uH
L206   1-408-777-00 s INDUCTOR CHIP 10uH
L207   1-408-777-00 s INDUCTOR CHIP 10uH
L208   1-408-777-00 s INDUCTOR CHIP 10uH

L210   1-408-777-00 s INDUCTOR CHIP 10uH
L220   1-410-482-31 s INDUCTOR 100uH
L401   1-408-777-00 s INDUCTOR CHIP 10uH
L403   1-408-777-00 s INDUCTOR CHIP 10uH
L404   1-408-777-00 s INDUCTOR CHIP 10uH

L405   1-408-777-00 s INDUCTOR CHIP 10uH
L406   1-408-777-00 s INDUCTOR CHIP 10uH
L407   1-408-777-00 s INDUCTOR CHIP 10uH
L408   1-408-777-00 s INDUCTOR CHIP 10uH
L409   1-408-777-00 s INDUCTOR CHIP 10uH

L501   1-408-777-00 s INDUCTOR CHIP 10uH
L502   1-408-797-11 s INDUCTOR CHIP 470uH
L503   1-408-765-21 s INDUCTOR CHIP 1uH
L601   1-408-777-00 s INDUCTOR CHIP 10uH
L602   1-408-777-00 s INDUCTOR CHIP 10uH

Q1   8-729-901-00 s TRANSISTOR DTC124EK
Q2   8-729-120-28 s TRANSISTOR 2SC1623-L5L6
Q3   8-729-216-22 s TRANSISTOR 2SA1162
Q4   8-729-402-81 s TRANSISTOR XN4501
Q5   8-729-216-22 s TRANSISTOR 2SA1162

Q6   8-729-402-81 s TRANSISTOR XN4501
Q7   8-729-035-96 s TRANSISTOR XN4402-(TX)
Q8   8-729-120-28 s TRANSISTOR 2SC1623-L5L6
Q9   8-729-216-22 s TRANSISTOR 2SA1162
Q10   8-729-402-81 s TRANSISTOR XN4501

Q11   8-729-120-28 s TRANSISTOR 2SC1623-L5L6
Q12   8-729-402-84 s TRANSISTOR XN4601
Q13   8-729-035-96 s TRANSISTOR XN4402-(TX)
Q14   8-729-402-81 s TRANSISTOR XN4501
Q15   8-729-402-84 s TRANSISTOR XN4601

Q16   8-729-402-84 s TRANSISTOR XN4601
Q17   8-729-402-84 s TRANSISTOR XN4601
Q18   8-729-120-28 s TRANSISTOR 2SC1623-L5L6
Q19   8-729-120-28 s TRANSISTOR 2SC1623-L5L6
Q20   8-729-901-00 s TRANSISTOR DTC124EK

Q21   8-729-402-81 s TRANSISTOR XN4501
Q41   8-729-901-00 s TRANSISTOR DTC124EK
Q42   8-729-901-00 s TRANSISTOR DTC124EK
Q43   8-729-216-22 s TRANSISTOR 2SA1162
Q201   8-729-901-00 s TRANSISTOR DTC124EK

Q202   8-729-101-07 s TRANSISTOR 2SB798
Q203   8-729-101-07 s TRANSISTOR 2SB798
Q204   8-729-140-75 s TRANSISTOR 2SD999-CLCK
Q205   8-729-216-22 s TRANSISTOR 2SA1162
Q206   8-729-216-22 s TRANSISTOR 2SA1162

Q401   8-729-120-28 s TRANSISTOR 2SC1623-L5L6
Q402   8-729-140-75 s TRANSISTOR 2SD999-CLCK

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Ref. No.
or Q'ty   Part No.   SP Description

Q403   8-729-120-28 s TRANSISTOR 2SC1623-L5L6
Q404   8-729-120-28 s TRANSISTOR 2SC1623-L5L6
Q405   8-729-017-80 s TRANSISTOR 2SD992-Z
Q406   8-729-017-80 s TRANSISTOR 2SD992-Z
Q407   8-729-017-80 s TRANSISTOR 2SD992-Z

Q408   8-729-017-80 s TRANSISTOR 2SD992-Z
Q409   8-729-017-80 s TRANSISTOR 2SD992-Z
Q410   8-729-140-75 s TRANSISTOR 2SD999-CLCK
Q501   8-729-901-00 s TRANSISTOR DTC124EK

R1   1-216-811-11 s METAL, CHIP 150 5% 1/16W
R2   1-216-811-11 s METAL, CHIP 150 5% 1/16W
R4   1-216-829-11 s METAL, CHIP 4.7K 5% 1/16W
R5   1-216-831-11 s METAL, CHIP 6.8K 5% 1/16W
R6   1-216-833-11 s METAL, CHIP 10K 5% 1/16W

R7   1-216-815-11 s METAL, CHIP 330 5% 1/16W
R8   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R9   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R10   1-216-815-11 s METAL, CHIP 330 5% 1/16W
R11   1-216-821-11 s METAL, CHIP 1K 5% 1/16W

R12   1-216-825-11 s METAL, CHIP 2.2K 5% 1/16W
R13   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R14   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R15   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R16   1-216-815-11 s METAL, CHIP 330 5% 1/16W

R17   1-216-825-11 s METAL, CHIP 2.2K 5% 1/16W
R18   1-216-803-11 s METAL, CHIP 33 5% 1/16W
R19   1-216-803-11 s METAL, CHIP 33 5% 1/16W
R20   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R21   1-216-821-11 s METAL, CHIP 1K 5% 1/16W

R22   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R23   1-216-844-11 s METAL, CHIP 82K 5% 1/16W
R24   1-216-819-11 s METAL, CHIP 680 5% 1/16W
R25   1-216-829-11 s METAL, CHIP 4.7K 5% 1/16W
R26   1-216-821-11 s METAL, CHIP 1K 5% 1/16W

R27   1-216-822-11 s METAL, CHIP 1.2K 5% 1/16W
R28   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W
R29   1-216-832-11 s METAL, CHIP 8.2K 5% 1/16W
R30   1-216-823-11 s METAL, CHIP 1.5K 5% 1/16W
R31   1-216-825-11 s METAL, CHIP 2.2K 5% 1/16W

R32   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R33   1-216-812-11 s METAL, CHIP 180 5% 1/16W
R34   1-216-803-11 s METAL, CHIP 33 5% 1/16W
R35   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W
R36   1-216-821-11 s METAL, CHIP 1K 5% 1/16W

R37   1-216-819-11 s METAL, CHIP 680 5% 1/16W
R38   1-216-819-11 s METAL, CHIP 680 5% 1/16W
R39   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R40   1-216-803-11 s METAL, CHIP 33 5% 1/16W
R41   1-216-832-11 s METAL, CHIP 8.2K 5% 1/16W

R42   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R43   1-216-828-11 s METAL, CHIP 3.9K 5% 1/16W
R44   1-216-803-11 s METAL, CHIP 33 5% 1/16W
R45   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R46   1-216-819-11 s METAL, CHIP 680 5% 1/16W

R47   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R48   1-216-853-11 s METAL, CHIP 470K 5% 1/16W
R49   1-216-825-11 s METAL, CHIP 2.2K 5% 1/16W
R50   1-216-824-11 s METAL, CHIP 1.8K 5% 1/16W
R51   1-216-839-11 s METAL, CHIP 33K 5% 1/16W

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Ref. No.
or Q'ty  Part No.      SP Description

R52    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R53    1-216-803-11 s METAL, CHIP 33 5% 1/16W
R56    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R57    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R58    1-216-825-11 s METAL, CHIP 2.2K 5% 1/16W

R59    1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R60    1-216-856-11 s METAL, CHIP 820K 5% 1/16W
R61    1-218-871-11 s METAL, CHIP 10K 0.5% 1/16W
R62    1-218-871-11 s METAL, CHIP 10K 0.5% 1/16W
R63    1-216-803-11 s METAL, CHIP 33 5% 1/16W

R64    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R65    1-216-829-11 s METAL, CHIP 4.7K 5% 1/16W
R66    1-216-825-11 s METAL, CHIP 2.2K 5% 1/16W
R67    1-216-837-11 s METAL, CHIP 22K 5% 1/16W
R68    1-216-833-11 s METAL, CHIP 10K 5% 1/16W

R69    1-216-826-11 s METAL, CHIP 2.7K 5% 1/16W
R70    1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R71    1-218-879-11 s METAL, CHIP 22K 0.5% 1/16W
R72    1-216-830-11 s METAL, CHIP 5.6K 5% 1/16W
R73    1-216-832-11 s METAL, CHIP 8.2K 5% 1/16W

R74    1-216-845-11 s METAL, CHIP 100K 5% 1/16W
R75    1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R76    1-216-831-11 s METAL, CHIP 6.8K 5% 1/16W
R77    1-216-836-11 s METAL, CHIP 18K 5% 1/16W
R78    1-216-835-11 s METAL, CHIP 15K 5% 1/16W

R79    1-216-836-11 s METAL, CHIP 18K 5% 1/16W
R80    1-216-835-11 s METAL, CHIP 15K 5% 1/16W
R81    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R82    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R83    1-216-833-11 s METAL, CHIP 10K 5% 1/16W

R84    1-216-828-11 s METAL, CHIP 3.9K 5% 1/16W
R85    1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R86    1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R87    1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R88    1-216-809-11 s METAL, CHIP 100 5% 1/16W

R89    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R90    1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R91    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R93    1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R94    1-216-812-11 s METAL, CHIP 180 5% 1/16W

R95    1-216-806-11 s METAL, CHIP 56 5% 1/16W
R96    1-216-814-11 s METAL, CHIP 270 5% 1/16W
R99    1-216-829-11 s METAL, CHIP 4.7K 5% 1/16W
R100   1-216-831-11 s METAL, CHIP 6.8K 5% 1/16W
R105   1-216-813-11 s METAL, CHIP 220 5% 1/16W

R106   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R107   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R108   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R109   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R110   1-216-813-11 s METAL, CHIP 220 5% 1/16W

R111   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R112   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R113   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R114   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R115   1-216-813-11 s METAL, CHIP 220 5% 1/16W

R116   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R117   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R118   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R119   1-216-813-11 s METAL, CHIP 220 5% 1/16W
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Ref. No.
or Q'ty  Part No.      SP Description

R120   1-216-813-11 s METAL, CHIP 220 5% 1/16W
R121   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R122   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R123   1-218-845-11 s METAL, CHIP 820 0.50%
R124   1-218-847-11 s METAL, CHIP 1K 0.5% 1/16W

R125   1-218-833-11 s METAL, CHIP 270 0.50% 1/16W
R126   1-216-864-11 s METAL, CHIP 0 5% 1/16W
R130   1-216-824-11 s METAL, CHIP 1.8K 5% 1/16W
R133   1-218-861-11 s METAL, CHIP 3.9K 0.5% 1/16W
R150   1-216-833-11 s METAL, CHIP 10K 5% 1/16W

R151   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R152   1-216-815-11 s METAL, CHIP 330 5% 1/16W
R153   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R154   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R159   1-216-809-11 s METAL, CHIP 100 5% 1/16W

R160   1-414-385-11 s FERRITE 0UH
R161   1-414-385-11 s FERRITE 0UH
R201   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W
R202   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W
R203   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W

R204   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W
R205   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W
R206   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W
R207   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W
R208   1-216-827-11 s METAL, CHIP 3.3K 5% 1/16W

R209   1-216-811-11 s METAL, CHIP 150 5% 1/16W
R210   1-216-864-11 s METAL, CHIP 0 5% 1/16W
R211   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R212   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R213   1-216-833-11 s METAL, CHIP 10K 5% 1/16W

R214   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R215   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R216   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R217   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R218   1-216-833-11 s METAL, CHIP 10K 5% 1/16W

R219   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R220   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R221   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R222   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R223   1-216-809-11 s METAL, CHIP 100 5% 1/16W

R224   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R225   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R226   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R227   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R228   1-216-809-11 s METAL, CHIP 100 5% 1/16W

R229   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R230   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R231   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R232   1-216-809-11 s METAL, CHIP 100 5% 1/16W
R233   1-216-803-11 s METAL, CHIP 33 5% 1/16W

R234   1-216-821-11 s METAL, CHIP 1K 5% 1/16W
R235   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R236   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R237   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R238   1-216-833-11 s METAL, CHIP 10K 5% 1/16W

R239   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R240   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R241   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R242   1-216-833-11 s METAL, CHIP 10K 5% 1/16W
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Ref. No. or Q'ty	Part No.	SP	Description	Ref. No. or Q'ty	Part No.	SP	Description
R243	1-216-813-11	s	METAL, CHIP 220 5% 1/16W	R423	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R244	1-216-813-11	s	METAL, CHIP 220 5% 1/16W	R424	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R245	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R425	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R246	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R426	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R247	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R427	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R248	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R428	1-216-847-11	s	METAL, CHIP 150K 5% 1/16W
R249	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R429	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R250	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R430	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R251	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R432	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R252	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R433	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R253	1-216-815-11	s	METAL, CHIP 330 5% 1/16W	R434	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R254	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W	R435	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R255	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W	R436	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R256	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R437	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R257	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R438	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R258	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R439	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R259	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R440	1-216-811-11	s	METAL, CHIP 150 5% 1/16W
R260	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R441	1-216-811-11	s	METAL, CHIP 150 5% 1/16W
R261	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R442	1-216-811-11	s	METAL, CHIP 150 5% 1/16W
R262	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R443	1-216-811-11	s	METAL, CHIP 150 5% 1/16W
R263	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R444	1-216-811-11	s	METAL, CHIP 150 5% 1/16W
R268	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R445	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R269	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R447	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R270	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R448	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R271	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R449	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R272	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R450	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R273	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R451	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R274	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W	R452	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R275	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W	R453	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R276	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W	R454	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R277	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W	R455	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R278	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R457	1-207-678-00	s	WIREWOUND 10 10% 5W
R279	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R460	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R280	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R461	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R281	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R462	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R282	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R463	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R283	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R465	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R284	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R466	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R285	1-216-809-11	s	METAL, CHIP 100 5% 1/16W	R470	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R401	1-216-817-11	s	METAL, CHIP 470 5% 1/16W	R471	1-217-294-00	s	WIREWOUND 4.7 10% 5W
R402	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R472	1-217-294-00	s	WIREWOUND 4.7 10% 5W
R403	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R473	1-217-294-00	s	WIREWOUND 4.7 10% 5W
R404	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R501	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R405	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W	R502	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R406	1-216-001-00	s	METAL, CHIP 10 5% 1/10W	R504	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R407	1-216-001-00	s	METAL, CHIP 10 5% 1/10W	R505	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R408	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R506	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R409	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W	R507	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R410	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R508	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R412	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R509	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R413	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W	R510	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R414	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W	R511	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R416	1-216-818-11	s	METAL, CHIP 560 5% 1/16W	R512	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R417	1-216-818-11	s	METAL, CHIP 560 5% 1/16W	R513	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R418	1-216-818-11	s	METAL, CHIP 560 5% 1/16W	R514	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R419	1-216-818-11	s	METAL, CHIP 560 5% 1/16W	R515	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R420	1-216-813-11	s	METAL, CHIP 220 5% 1/16W	R516	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R421	1-216-813-11	s	METAL, CHIP 220 5% 1/16W	R517	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R422	1-216-813-11	s	METAL, CHIP 220 5% 1/16W	R518	1-414-385-11	s	FERRITE 0UH

(MA-91 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R522	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R523	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R524	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R525	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R526	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R527	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R528	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R529	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R530	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R531	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R532	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R533	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R534	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R535	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R536	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R542	1-414-385-11	s	FERRITE 0UH
R543	1-414-385-11	s	FERRITE 0UH
R544	1-414-385-11	s	FERRITE 0UH
R545	1-414-385-11	s	FERRITE 0UH
R546	1-414-385-11	s	FERRITE 0UH
R547	1-414-385-11	s	FERRITE 0UH
R548	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R549	1-414-385-11	s	FERRITE 0UH
R550	1-414-385-11	s	FERRITE 0UH
R551	1-414-385-11	s	FERRITE 0UH
R552	1-414-385-11	s	FERRITE 0UH
R553	1-414-385-11	s	FERRITE 0UH
R554	1-414-385-11	s	FERRITE 0UH
R555	1-414-385-11	s	FERRITE 0UH
R556	1-414-385-11	s	FERRITE 0UH
R557	1-414-385-11	s	FERRITE 0UH
R558	1-414-385-11	s	FERRITE 0UH
R559	1-414-385-11	s	FERRITE 0UH
R560	1-414-385-11	s	FERRITE 0UH
R561	1-414-385-11	s	FERRITE 0UH
R562	1-414-385-11	s	FERRITE 0UH
R563	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R565	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R566	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R567	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R568	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R569	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R570	1-414-385-11	s	FERRITE 0UH
R571	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R572	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R573	1-414-385-11	s	FERRITE 0UH
R574	1-414-385-11	s	FERRITE 0UH
R575	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R576	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R577	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R578	1-414-385-11	s	FERRITE 0UH
R579	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R580	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R581	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R582	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R583	1-414-385-11	s	FERRITE 0UH
R584	1-414-385-11	s	FERRITE 0UH
R601	1-414-385-11	s	FERRITE 0UH
R602	1-414-385-11	s	FERRITE 0UH

(MA-91 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R603	1-414-385-11	s	FERRITE 0UH
R604	1-414-385-11	s	FERRITE 0UH
R605	1-414-385-11	s	FERRITE 0UH
R606	1-414-385-11	s	FERRITE 0UH
R607	1-414-385-11	s	FERRITE 0UH
R608	1-414-385-11	s	FERRITE 0UH
R609	1-414-385-11	s	FERRITE 0UH
R610	1-414-385-11	s	FERRITE 0UH
R611	1-414-385-11	s	FERRITE 0UH
R612	1-414-385-11	s	FERRITE 0UH
R613	1-414-385-11	s	FERRITE 0UH
R614	1-414-385-11	s	FERRITE 0UH
R615	1-414-385-11	s	FERRITE 0UH
R616	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R617	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R618	1-414-385-11	s	FERRITE 0UH
R619	1-414-385-11	s	FERRITE 0UH
R630	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R631	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R640	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R641	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R642	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R645	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
RV2	1-241-178-21	s	RES, ADJ METAL, CHIP 4.7K
RV3	1-238-087-11	s	RES, ADJ, 1K
RV4	1-238-090-11	s	RES, ADJ, 10K
RV5	1-241-092-11	s	RES, ADJ METAL, CHIP 47K
RV6	1-241-092-11	s	RES, ADJ METAL, CHIP 47K
RV401	1-238-090-11	s	RES, ADJ, 10K
RY1	1-515-614-11	s	RELAY
RY2	1-515-757-11	s	RELAY
X201	1-577-101-11	s	VIBRATOR, CERAMIC 4.1900MHz
X501	1-760-337-21	s	VIBRATOR, CRYSTAL
X601	1-767-425-21	s	CRYSTAL 23.0400MHz

PTC-98 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8318-923-A	o	MOUNTED CIRCUIT BOARD,PTC-98
1pc	3-613-826-01	o	HOLDER,LED
CN301	1-568-238-11	s	CONNECTOR, FPC (ZIF) 16P
CN302	1-784-978-11	o	CONNECTOR, FLEXIBLE 10P
CN303	1-774-730-21	s	CONNECTOR 3P, MALE
D301	8-719-045-59	s	DIODE TLN225
PH301	8-749-014-55	s	IC RPI-5200

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SE-441 BOARD
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Ref. No.
or Q'ty  Part No.      SP Description

1pc      A-8318-922-A o MOUNTED CIRCUIT BOARD, SE-441
1pc      3-613-823-01 o HOLDER,SENSOR

CN201    1-691-199-21 s CONNECTOR, FPC 26P
CN202    1-774-730-21 s CONNECTOR 3P, MALE
CN203    1-774-730-21 s CONNECTOR 3P, MALE
CN204    1-770-160-21 s CONNECTOR 2P, MALE
CN205    1-569-775-21 s CONNECTOR 5P, MALE

CN206    1-580-056-21 o CONNECTOR 3P, MALE
CN207    1-580-056-21 o CONNECTOR 3P, MALE
CN208    1-580-056-21 o CONNECTOR 3P, MALE
CN209    1-569-478-21 s CONNECTOR, FPC 20P
CN210    1-568-238-11 s CONNECTOR, FPC (ZIF) 16P

CN211    1-569-478-21 s CONNECTOR, FPC 20P
CN212    1-568-238-11 s CONNECTOR, FPC (ZIF) 16P

PH201    8-719-052-69 s DIODE RPI-352
PH202    8-719-052-69 s DIODE RPI-352


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SE-442 BOARD
------------
Ref. No.
or Q'ty  Part No.      SP Description

1pc      1-670-055-11 o PRINTED WIRING BOARD, SE-442

CN401    1-569-775-21 s CONNECTOR 5P, MALE

PH401    8-719-052-69 s DIODE RPI-352
PH402    8-719-052-69 s DIODE RPI-352


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SE-443 BOARD
------------
Ref. No.
or Q'ty  Part No.      SP Description

CN501    1-580-056-21 o CONNECTOR 3P, MALE

PH501    8-749-010-50 s PHOTO INTERUPTER RPI-5100


------------
SE-485 BOARD
------------
Ref. No.
or Q'ty  Part No.      SP Description

1pc      1-670-057-11 o PRINTED WIRING BOARD, SE-485

CN502    1-580-056-21 o CONNECTOR 3P, MALE

PH502    8-719-988-59 s PHOTO TRANSISTOR PT501A


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SE-486 BOARD
------------
Ref. No.
or Q'ty  Part No.      SP Description

1pc      1-670-058-11 o PRINTED WIRING BOARD, SE-486
1pc      3-613-825-01 o HOLDER,MENU SENSOR

CN701    1-580-056-21 o CONNECTOR 3P, MALE

D701     8-719-061-32 s DIODE GL4800

Q701     8-729-019-26 s PHOTO TRANSISTOR PT493F


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SU-41 BOARD
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Ref. No.
or Q'ty  Part No.      SP Description

1pc      1-670-059-11 o PRINTED WIRING BOARD, SU-41

CN801    1-774-730-21 s CONNECTOR 3P, MALE


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SU-42 BOARD
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Ref. No.
or Q'ty  Part No.      SP Description

1pc      1-670-060-11 o PRINTED WIRING BOARD, SU-42

CN802    1-774-730-21 s CONNECTOR 3P, MALE
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FRAME
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Ref. No.
or Q'ty  Part No.    SP Description

1pc      Δ 1-468-320-11 s REGULATOR, SWITCHING
1pc        1-475-785-11 s PANEL UNIT, FRONT
1pc        1-475-865-11 s CUTTER UNIT
1pc        1-500-556-11 s HEAD, THERMAL
1pc        1-543-762-11 s BEAD, FERRITE
2pcs       1-569-618-21 o HOUSING 3P
1pc        1-670-203-11 s PRINTED WIRING BOARD, FLEXIBLE
1pc        1-763-007-21 s FAN, DC
1pc        1-763-134-11 s MOTOR, STEPPING
1pc        1-771-458-11 s KEY, SHEET
1pc        1-783-743-11 o WIRE, FLAT TYPE (20 CORE)
1pc        1-783-744-11 o WIRE, FLAT TYPE (22 CORE)
1pc        1-783-745-11 o WIRE, FLAT TYPE (16 CORE)
1pc        1-783-746-11 o WIRE, FLAT TYPE (16 CORE)
1pc        1-783-747-11 o WIRE, FLAT TYPE (20 CORE)
1pc        1-783-749-11 o WIRE, FLAT TYPE (26 CORE)
1pc        1-783-748-11 o WIRE, FLAT TYPE (20 CORE)
1pc        1-801-886-11 s LCD MODULE
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PACKING MATERIALS & SUPPLIED ACCESSORIES
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Ref. No.
or Q'ty  Part No.    SP Description

1pc        1-551-475-31 s CABLE ASSY
1pc      Δ 1-551-631-22 s CORD, POWER(for CE)
1pc      Δ 1-559-945-11 s CORD, POWER(for UC)

1pc        3-862-475-01 s MANUAL, INSTRUCTION
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SECTION 8
BLOCK DIAGRAMS

UP-980(UC)
UP-980CE(CE)

MA-91 (1/2)

FRONT PANEL

CN209
LCD_VLED+
LCDD3-LCDD0
LCD_E
LCD_R/W
LCD_RS
LCD_V
CUTTER_MOTOR1
CUTTER_MOTOR2
CUTTER-SENS2

15V
Q204
REGULATOR

38-35 LCDD7-LCDD4

LCD_E
LCD_R/W
LCD_RS

K-MENU
K-SKIP
K-CUT
K-FEED
K-COPY
K-CAPT
K-PRINT
K-OPEN

IC201
MENU-CONTROL-CPU

FOR UP-980
Q202 Q205
CAPTURE-LED
DRIVE

FOR UP-980
Q203 Q206
PRINT-LED
DRIVE

LED-CAPT 59

LED-PRINT 60

CN207
nKEY_MENU
nKEY_SKIP
nKEY_CUT
nKEY_FEED
nKEY_COPY
nKEY_CAPTURE
nKEY_PRINT
nKEY_OPEN
nLED_CAPTURE
nLED_PRINT

nKEY_MENU
nKEY_SKIP
nKEY_CUT
nKEY_FEED
nKEY_COPY
nKEY_CAPTURE
nKEY_PRINT
nKEY_OPEN
nLED_CAPTURE
nLED_PRINT

K-MULTI
K-CLEAR
K-BRIGHT
K-CONT
K-EXEC
K-DOWN
K-UP
K-RIGHT
K-LEFT

ROMMODE
ROMSDA
ROMSCL

DAD1
DAD0
DACLK
DALD

RESET

SCID2
SCID1
SCICLK
SCIREQ
SCIACK

K-RMT

MODE
SDA
SCL

DO
DI
CLK
LD

AO4
AO5

CONTRAST 2/2
BRIGHTNESS 2/2

IC202
EEPROM

IC203
D/A CON

AO6

IC502
RESET-GENERATOR

J501
JACK

BEO 2/2
HEAD-THERM1 2/2
HEAD-THERM2 2/2

FOR UP-980
IC401 Q402
CUTTER
MOTOR-DRIVE

BEO
RESET
KCSD1
KCSD2
KCSCLK
KCREQ
KCACK
RMT
RBY

Q501
BUSY-LED
DRIVE

CN204
FAN+
FAN-
HEAD_MOTOR1
HEAD_MOTOR2
DOOR_MOTOR1
DOOR_MOTOR2

CM1
CM2

Q409 Q410
FAN
MOTOR-DRIVE

FAN

IC402 Q403
HEAD
MOTOR-DRIVE

HM1
HM2

IC403 Q404
DOOR
MOTOR-DRIVE

DM1
DM2

IC404
AMP

HDTEMP

TRAP 37
TRAPSEL 36
AGC 34
SHAPNESS 33
INPUTSEL 32
CSYNC 31
TERM75 38

TRAP 2/2
TRAPSEL 2/2
AGC 2/2
SHAPNESS 2/2
INPUTSEL 2/2
CSYNC 2/2
TERM75 2/2

G/A-CONTROL 2/2

HEAD-SENS1-LAMP
HEAD-SENS2-LAMP
DOOR-SENS1_LAMP
DOOR-SENS2_LAMP
PAPER_SENS2_LAMP
MENUPOSI_SENS_LAMP
HEAD-SENS1-PHTR
HEAD-SENS2-PHTR
DOOR-SENS1_PHTR
DOOR-SENS2_PHTR
PAPER_SENS2_PHTR
PAPER_SENS1_PHTR
MENUPOSI_SENS_PHTR

5V

IC404
COMPARATOR

LSENS

IC505
SYSTEM-CONTROL
CPU

CSENS2
HSENS1
HSENS2
DSENS1
DSENS2
PSENS2
PSENS1
MPSENS
PSENS3
CSENS1

IC406
IC406
IC405
IC405
IC405
IC405
IC406
IC405

FETCH 72
FETCHSTOP 71
FETCHING 70
COPY 69
COPYSTOP 60
COPYING 59
INTV 58
MTPULSE 56
GARESET 55
REGSEL0 54
REGSEL1 53
REGLD 52
REGEN 51
GACLK 50
GASCID 49
VF 48
EXTV 47

PMA1 93
PMA2 94
PMB1 95
PMB2 96

Q407 Q408
Q405 Q406
PLATEN
MOTOR-DRIVE

IC407

CN201

M

PLATEN_MOTOR (STEPPING)

CN206
PAPER_SENS3_LAMP
PAPER_SENS3_PHTR
SUBKEY (8-0)
CUTTER_SENS1
PAPER_SENS1_LAMP

5V

nCHKREQ
nCHKACK
CHKTXD
CHKRXD
CHKCLK

BUZZER

Q401
BUZZER DRIVE

BZ

TO.CHECKER

CN208 DOOR LOCK TH
DOOR LOCK

nCHKREQ
nCHKACK
CHKTXD
CHKRXD
CHKCLK

OVERALL (1/2)
B-UP980-BLOCK-SM

UP-980(UC)
UP-980CE(CE)

OVERALL (2/2)

B-UP980-BLOCK-SM

UP-980(UC)
UP-980CE(CE)

SECTION 9
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

MA-91 (1/5)

B-UP980-MA91-SM

UP-980(UC)
UP-980CE(CE)

A   B   C   D   E   F   G   H

GA_RESET   1

D_5V-2

D_GND2

5V

D_5V

D_GND

IC602
TMS418160A-60DZ

IC603
TMS418160A-60DZ

D00	DA0 (LSB)	4
D01	DA1	4
D02	DA2	4
D03	DA3	4
D04	DA4	4
D05	DA5	4
D06	DA6	4
D07	DA7 (MSB)	4
D10	DB0 (LSB)	4
D11	DB1	4
D12	DB2	4
D13	DB3	4
D14	DB4	4
D15	DB5	4
D16	DB6	4
D17	DB7 (MSB)	4
DCK00	CLK A	4
DCK01	CLK B	4
CLAMP R618 EMI	CLUMP PULS	4
CSY R619 EMI	C SYNC	1,4

MA-91 (3/5)
B-UP980-MA91-SM

UP-980(UC)
UP-980CE(CE)

TRAP		TRAP ON/OFF	1
TRAP SEL		TRAP SELECT	1
AGC		AGC ON/OFF	1
SHARPNESS		SHARPNESS	1
INPUT SEL		INPUT SELECT	1
C SYNC		C SYNC	1.3

DA0		DA0 (LSB)	3
DA1		DA1	3
DA2		DA2	3
DA3		DA3	3
DA4		DA4	3
DA5		DA5	3
DA6		DA6	3
DA7		DA7 (MSB)	3
DB0		DB0 (LSB)	3
DB1		DB1	3
DB2		DB2	3
DB3		DB3	3
DB4		DB4	3
DB5		DB5	3
DB6		DB6	3
DB7		DB7 (MSB)	3
CLK A		CLK A	3
CLK B		CLK B	3
CLAMP PULS		CLUMP PULS	3

12V	
D_5V	
D_GND	
D_5V-2	
D_GND2	

MA-91 (4/5)
B-UP980-MA91-SM

MA-91 (5/5)

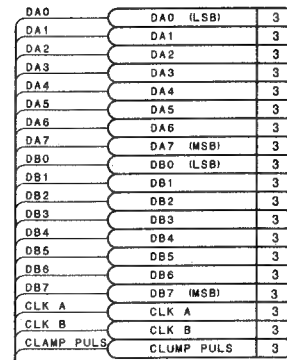B-UP980-MA91-SM

UP-980(UC)
UP-980CE(CE)

MA-91
1-670-053-11
>EP-(GW+GN)<

SONY
MADE IN JAPAN

MA-91 - A SIDE -
1-670-053-11

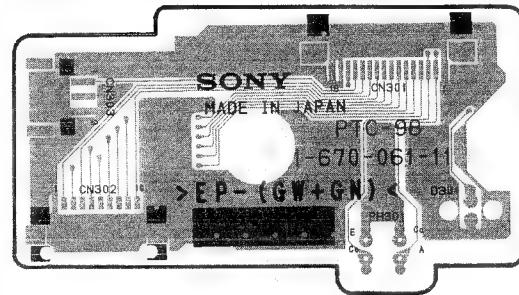| Ref	Loc	Ref	Loc
BZ401	D-4	IC402	F-4
		IC403	G-4
CN1	J-1	IC404	E-4
CN201	A-5	IC405	E-4
CN202	C-5	IC406	D-4
CN203	D-5	IC407	B-4
CN204	E-5	IC502	E-4
CN205	G-5	IC503	K-3
CN206	H-5	IC505	E-3
CN207	J-5	IC601	C-2
CN208	G-3	IC602	A-2
CN209	J-5	IC603	A-3
CN210	K-4	IC604	C-3
CN211	E-1	IC605	B-3
		IC606	B-3
D1	H-1		
D201	H-5	J501	B-1
D202	H-5		
D203	H-5	Q1	K-1
D204	H-5	Q2	J-1
D205	H-5	Q3	J-1
D206	H-5	Q4	J-2
D207	H-5	Q5	J-2
D208	H-5	Q6	J-2
D209	H-5	Q7	J-2
D210	J-4	Q8	J-2
D211	J-4	Q9	J-1
D212	J-4	Q10	H-1
D213	J-4	Q11	G-1
D214	J-4	Q12	G-1
D215	J-4	Q13	G-1
D216	J-4	Q14	G-1
D217	J-4	Q15	F-1
D218	J-4	Q16	F-1
D219	J-4	Q17	E-2
D220	D-5	Q18	E-2
D221	D-5	Q19	F-1
D222	D-5	Q20	F-1
D223	D-5	Q21	E-2
D224	D-5	Q41	G-2
D225	D-5	Q42	G-2
D226	D-5	Q43	J-1
D227	D-5	Q201	J-4
D228	D-5	Q202	K-5
D229	D-5	Q203	J-5
D230	D-5	Q204	D-5
D231	D-5	Q205	K-5
D232	D-5	Q206	J-5
D233	D-5	Q401	D-4
D234	E-5	Q402	F-4
D235	H-5	Q403	F-4
D236	H-5	Q404	F-4
D237	J-5	Q405	A-5
D238	J-5	Q406	A-5
D401	D-4	Q407	A-5
D402	C-4	Q408	B-5
D403	A-5	Q409	H-4
D404	A-5	Q410	G-4
D405	A-5	Q501	C-1
D406	B-5		
D408	A-4	RV2	G-2
D409	B-4	RV3	F-1
D410	E-4	RV4	G-2
D411	F-5	RV5	F-2
D412	F-5	RV6	F-2
D413	F-5	RV401	E-4
D414	F-5		
D415	F-5	RY1	K-1
D416	F-5	RY2	F-1
D417	E-5		
D501	C-1	TP1	H-1
D502	C-1	TP2	G-2
D503	C-1	TP3	F-1
		TP4	F-2
F401	C-4	TP5	E-1
		TP6	E-1
FB501	C-4	TP7	E-2
FB502	C-4	TP8	E-2
		TP501	E-4
FL1	J-2	TP502	K-1
FL2	J-2	TP503	F-5
		TP504	D-4
IC1	J-2	TP505	G-5
IC2	H-2	TP506	G-5
IC3	H-1	TP507	C-4
IC4	G-1	TP508	G-3
IC5	G-2	TP509	F-3
IC6	E-2	TP510	F-3
IC7	D-3	TP511	K-5
IC8	D-2		
IC201	J-3	X201	J-3
IC202	J-3	X501	E-3
IC203	H-3	X601	C-3
IC401	H-4		

MA-91
1-670-053-11

SONY
MADE IN JAPAN

>EP (GW+GN)<
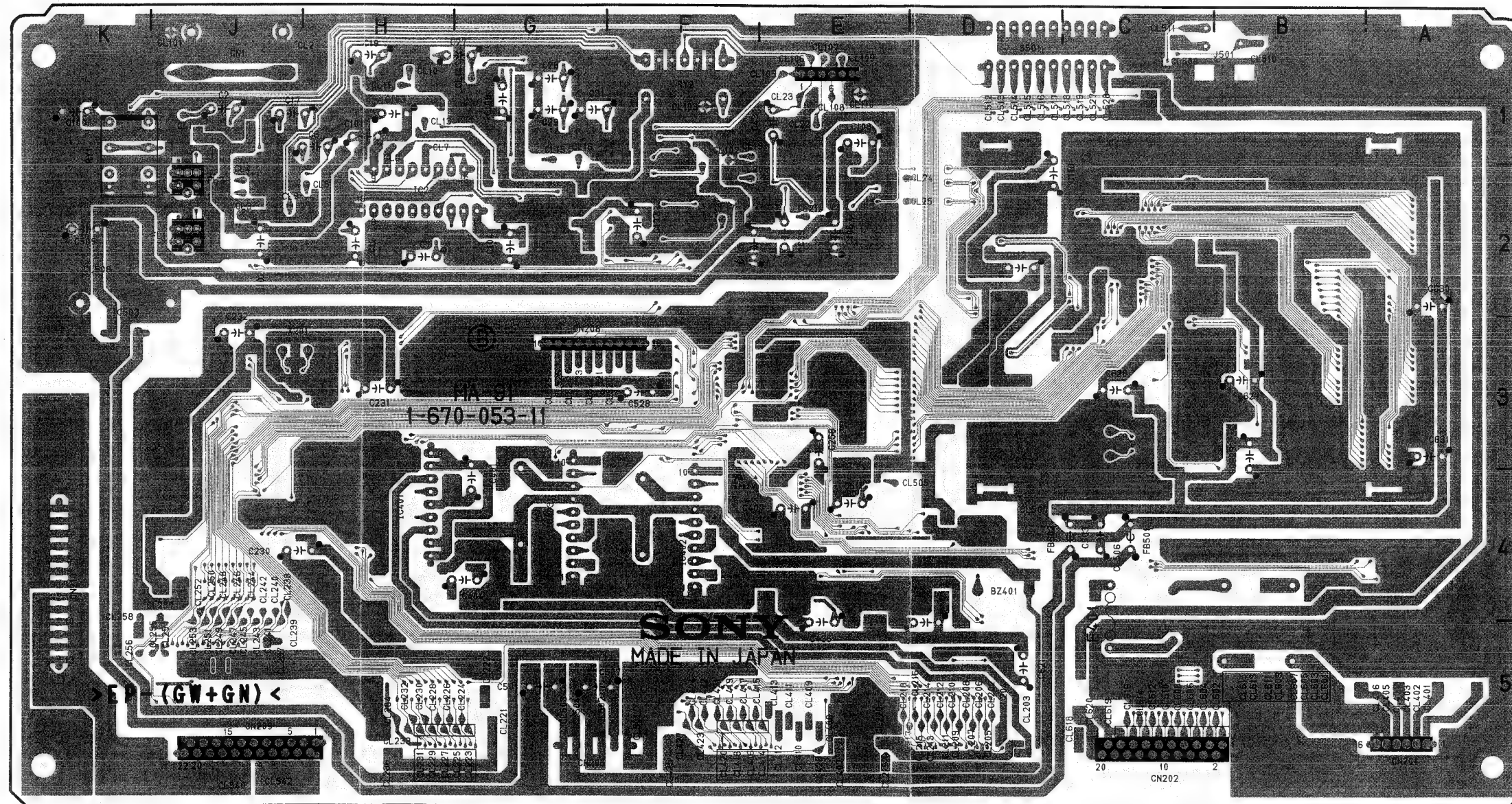
MA-91 - B SIDE -
1-670-053-11

BZ401	D-4	IC402	F-4
		IC403	G-4
CN1	J-1	IC404	E-4
CN201	A-5	IC405	E-4
CN202	C-5	IC406	D-4
CN203	D-5	IC407	D-4
CN204	E-5	IC502	E-4
CN205	G-5	IC503	K-3
CN206	H-5	IC505	E-3
CN207	J-5	IC601	C-2
CN208	G-3	IC602	A-2
CN209	J-5	IC603	A-3
CN210	K-4	IC604	C-3
CN211	E-1	IC605	B-3
		IC606	B-3
D1	H-1		
D201	H-5	J501	B-1
D202	H-5		
D203	H-5	Q1	K-1
D204	H-5	Q2	J-1
D205	H-5	Q3	J-1
D206	H-5	Q4	J-1
D207	H-5	Q5	J-2
D208	H-5	Q6	J-2
D209	H-5	Q7	J-2
D210	J-4	Q8	J-2
D211	J-4	Q9	J-1
D212	J-4	Q10	H-1
D213	J-4	Q11	G-1
D214	J-4	Q12	G-1
D215	J-4	Q13	G-1
D216	J-4	Q14	G-1
D217	J-4	Q15	F-2
D218	J-4	Q16	F-2
D219	J-4	Q17	F-2
D220	D-5	Q18	E-2
D221	D-5	Q19	E-1
D222	D-5	Q20	E-1
D223	D-5	Q21	E-2
D224	D-5	Q41	G-2
D225	D-5	Q42	G-2
D226	D-5	Q43	J-1
D227	D-5	Q201	J-4
D228	D-5	Q202	K-5
D229	D-5	Q203	J-5
D230	D-5	Q204	D-5
D231	D-5	Q205	K-5
D232	D-5	Q206	J-5
D233	D-5	Q401	D-4
D234	E-5	Q402	F-4
D235	H-5	Q403	F-4
D236	H-5	Q404	F-4
D237	J-5	Q405	A-5
D238	J-5	Q406	A-5
D401	D-4	Q407	A-5
D402	C-4	Q408	B-5
D403	A-5	Q409	H-4
D404	A-5	Q410	G-4
D405	A-5	Q501	E-1
D406	B-5		
D408	A-4	RV2	G-2
D409	B-4	RV3	F-2
D410	E-4	RV4	F-2
D411	F-5	RV5	F-2
D412	F-5	RV6	F-2
D413	F-5	RV401	E-4
D414	F-5		
D415	F-5	RY1	K-1
D416	F-5	RY2	F-1
D417	E-5		
D501	C-1	TP1	H-1
D502	C-1	TP2	G-2
D503	C-1	TP3	F-1
		TP4	
F401	C-4	TP5	E-1
		TP6	E-1
FB501	C-4	TP7	E-2
FB502	C-4	TP8	E-2
		TP501	E-4
FL1	J-2	TP502	K-1
FL2	J-2	TP503	F-5
		TP504	D-4
IC1	J-2	TP505	G-5
IC2	H-2	TP506	G-5
IC3	H-1	TP507	C-4
IC4	G-1	TP508	G-3
IC5	G-2	TP509	F-3
IC6	E-2	TP510	F-1
IC7	D-3	TP511	K-5
IC8	D-2		
IC201	J-3	X201	J-3
IC202	J-3	X501	E-3
IC203	H-3	X601	C-3
IC401	H-4		

UP-980(UC)
UP-980CE(CE)

PTC-98 - A SIDE -
1-670-061-11

PTC-98 - B SIDE -
1-670-061-11
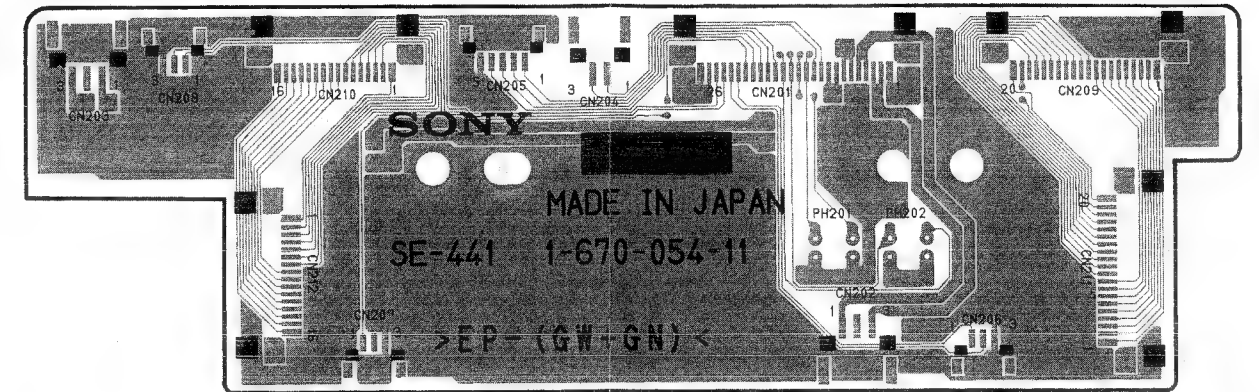
SE-441 - A SIDE -
1-670-054-11
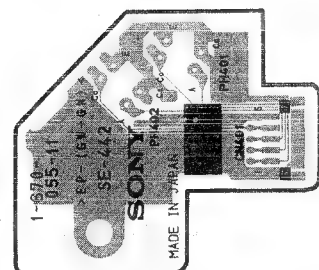
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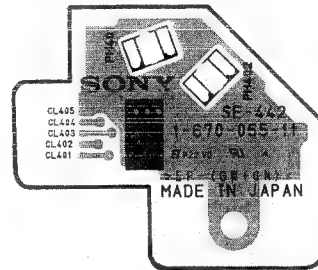
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1-670-055-11
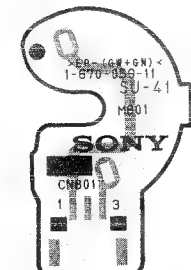
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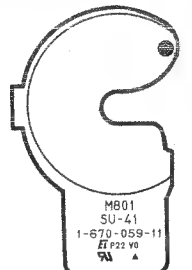
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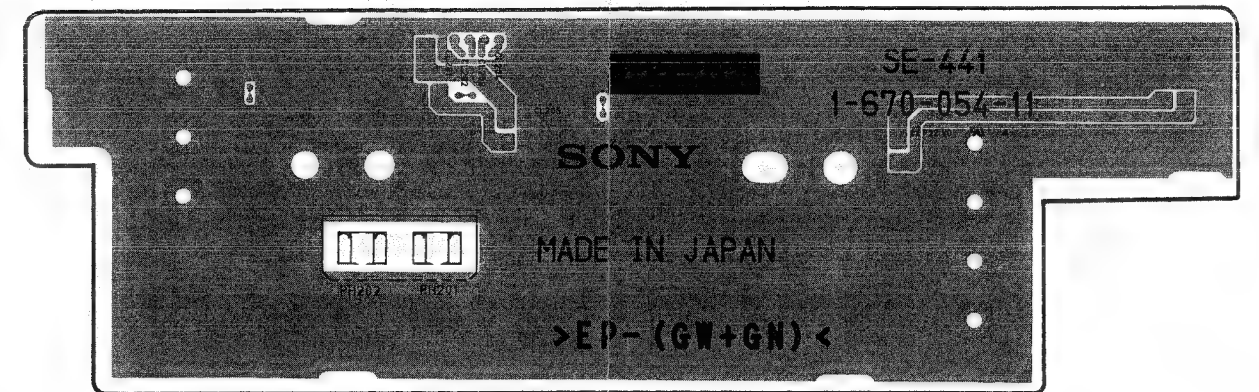
SE-485 - A SIDE -
1-670-057-11

SE-485 - B SIDE -
1-670-057-11

SU-42 - A SIDE -
1-670-060-11

SU-42 - B SIDE -
1-670-060-11

SE-441 - B SIDE -
1-670-054-11

HN-256 - A SIDE -
1-670-062-11

HN-256 - B SIDE -
1-670-062-11

SE-443 - A SIDE -
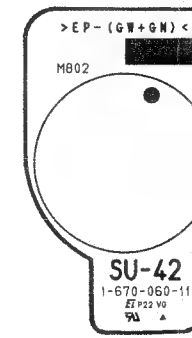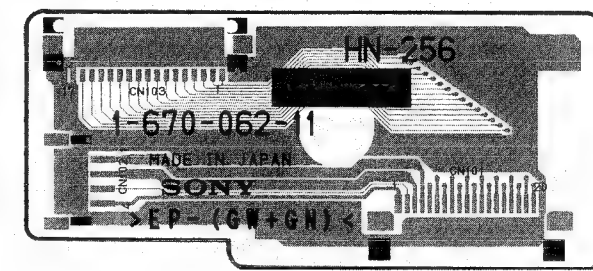1-670-056-11

SE-443 - B SIDE -
1-670-056-11

SE-486 - A SIDE -
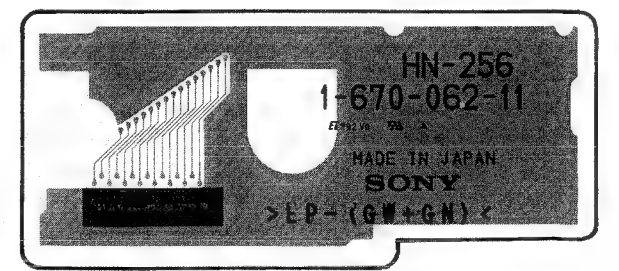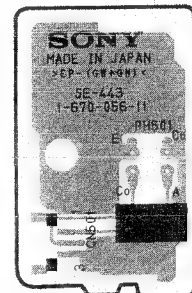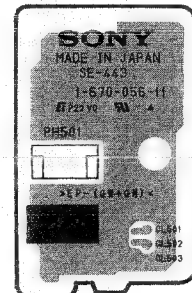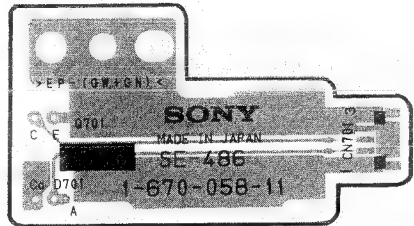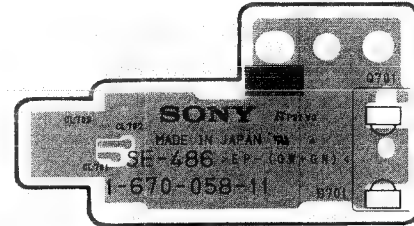1-670-058-11

SE-486 - B SIDE -
1-670-058-11

CN203

1	GND
2	CUTTER_SENS2
3	CUTTER_MOTOR1
4	CUTTER_MOTOR2
5	LCD_VLED+
6	LCD_VLED-
7	LCD_DB7
8	LCD_DB6
9	LCD_DB5
10	LCD_DB4
11	LCD_DB3
12	LCD_DB2
13	LCD_DB1
14	LCD_DB0
15	LCD_E
16	LCD_R/W
17	LCD_RS
18	LCD_V
19	VDD
20	GND

CN224

1	GND
2	HEAD_MOTOR1
3	HEAD_MOTOR1
4	HEAD_MOTOR2
5	HEAD_MOTOR2
6	DOOR_MOTOR1
7	DOOR_MOTOR1
8	DOOR_MOTOR2
9	DOOR_MOTOR2
10	FAN+
11	FAN-
12	HEAD_SENS1_LAMP
13	HEAD_SENS1_PHTR
14	HEAD_SENS2_LAMP
15	HEAD_SENS2_PHTR
16	DOOR_SENS1_LAMP
17	DOOR_SENS1_PHTR
18	DOOR_SENS2_LAMP
19	DOOR_SENS2_PHTR
20	PAPER_SENS1_PHTR
21	PAPER_SENS2_LAMP
22	PAPER_SENS2_PHTR
23	MENUPOSI_SENS_LAMP
24	MENUPOSI_SENS_PHTR
25	GND
26	GND

CN205 TO_POWER_SUPPLY

1	+5V
2	+5V
3	GND
4	GND
5	+15V
6	GND

CN206

1	D.GND
2	PAPER_SENS3_LAMP
3	PAPER_SENS3_PHTR
4	KEY_MULTI (SW1)
5	KEY_CLEAR (SW2)
6	KEY_BRIGHT (SW3)
7	KEY_CONT (SW4)
8	KEY_EXEC (SW5)
9	KEY_DOWN (SW6)
10	KEY_UP (SW7)
11	KEY_RIGHT (SW8)
12	KEY_LEFT (SW9)
13	CUTTER_SENS1
14	PAPER_SENS1_LAMP
15	D.GND
16	D.GND

J501 JACK

CN201

1	A (ORANGE)
2	Ā (YELLOW)
3	B (BROWN)
4	B̄ (BLUE)
5	+V (RED)
6	+V (WHITE)

PLATEN_MOTOR

CN202

1	HEAD_DATA10
2	HEAD_DATA9
3	HEAD_DATA8
4	HEAD_DATA7
5	HEAD_DATA6
6	HEAD_DATA5
7	HEAD_DATA4
8	HEAD_DATA3
9	HEAD_DATA2
10	HEAD_DATA1
11	HEAD_CLK
12	nHEAD_STB
13	nHEAD_LATCH
14	HEAD_BEO
15	HEAD_THERM2
16	HEAD_THERM1
17	GND
18	VDD
19	GND
20	VDD

THERMAL HEAD

CN209

1	GND
2	GND
3	GND
4	GND
5	GND
6	GND
7	GND
8	GND
9	GND
10	GND
11	GND
12	VH
13	VH
14	VH
15	VH
16	VH
17	VH
18	VH
19	VH
20	VH
21	VH
22	VH

CN207

1	D.GND
2	SW_SIDE
3	SW_SMALL
4	RV_CONT_H
5	RV_CONT_C
6	RV_CONT_L
7	RV_BRT_H
8	RV_BRT_C
9	RV_BRT_L
10	nKEY_MENU
11	nKEY_SKIP
12	nKEY_CUT
13	nKEY_FEED
14	nKEY_COPY
15	nKEY_CAPTURE
16	nKEY_PRINT
17	nKEY_OPEN
18	nLED_CAPTURE
19	nLED_PRINT
20	nLED_PAPER_EMPTY
21	D.5V
22	D.GND

FRONT KEY BOARD

1	GND
2	N.C
3	N.C
4	GND
5	GND
6	GND
7	GND
8	GND
9	GND
10	nKEY_MENU
11	nKEY_SKIP
12	nKEY_CUT
13	nKEY_FEED
14	nKEY_COPY
15	nKEY_CAPTURE
16	nKEY_PRINT
17	nKEY_OPEN
18	nLED_CAPTURE
19	nLED_PRINT
20	N.C
21	D.5V
22	GND

MENU SW8
SKIP SW7
CUT SW6
FEED SW5
CAPTURE SW4
COPY SW3
PRINT SW2
OPEN SW1

MA-91

CN208 TO.CHECKER: GND, +5V, nCHKREQ, nCHKACK, CHKTX0, CHKRX0, CHKCLK, DOOR_LOOCK, DOOR_LOOCK_TH, GND

CN211 TO.CHECKER: C-SYNC, AMP_IN, A/DIN, VRT, VRB, GND

CN210 TO.POWER_SUPPLY: VH, VH, VH, VH, VH, VH, GND, GND, GND, GND, GND, GND, GND

VIDEO-OUT   VIDEO-IN

FRAME

B-UP980-HARNESS-SM

UP-980(UC)
UP-980CE(CE)

A   B   C   D   E   F   G   H

SONY.

VIDEO GRAPHIC PRINTER

UP-980
UP-980CE

SERVICE MANUAL

SUPPLEMENT-1

Please add and replace your manual with this SUPPLEMENT-1
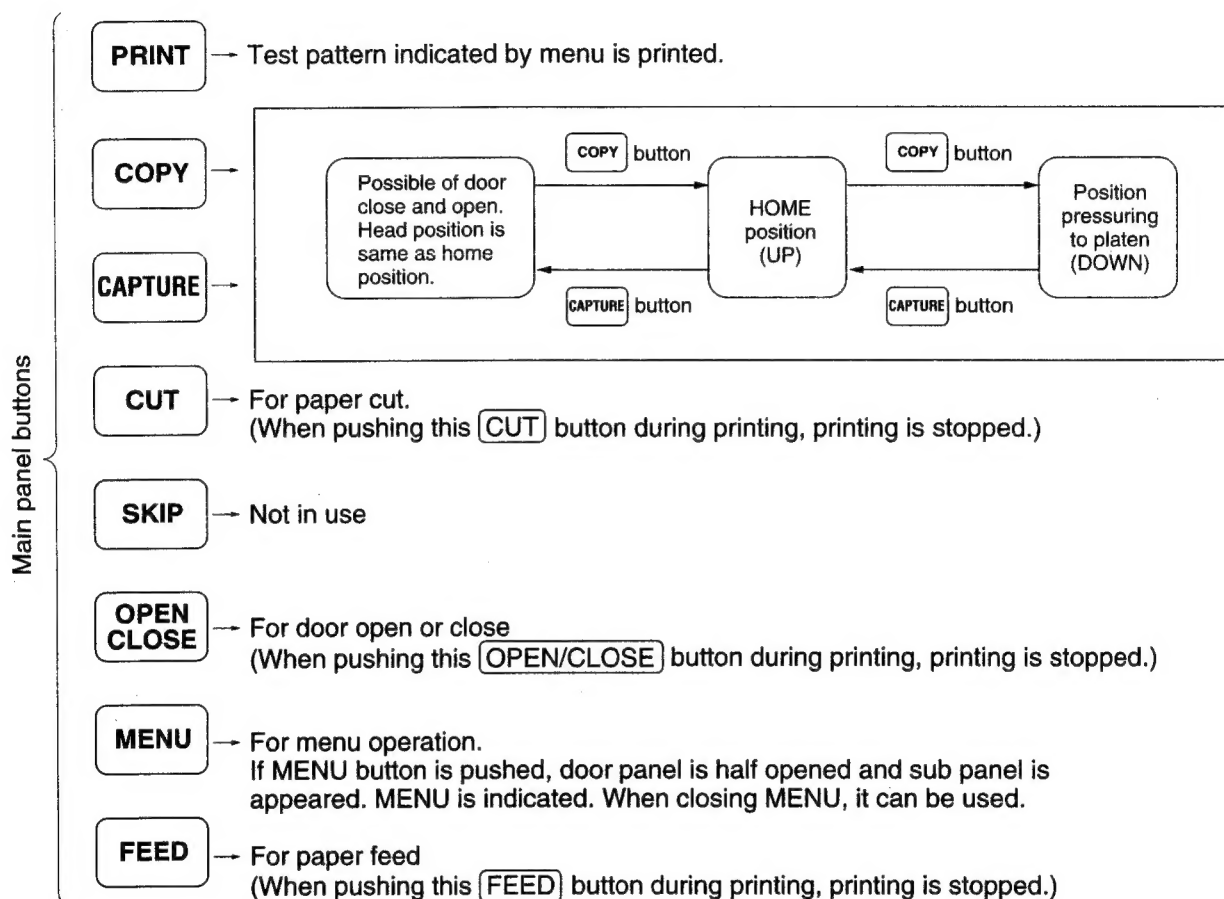
SUBJECT

- EXPLANATION OF SERVICE MODE

EXPLANATION OF SERVICE MODE

To enter the SERVICE MODE, push the POWER button while | PRINT | and | COPY | buttons are pushed simultaneously.

1. BUTTON MENU

Main panel buttons

| PRINT | → Test pattern indicated by menu is printed.

| COPY | →

| CAPTURE | →

| Possible of door close and open. Head position is same as home position. | → COPY button → | HOME position (UP) | → COPY button → | Position pressuring to platen (DOWN) |
| ← CAPTURE button ← | | ← CAPTURE button ← | |

| CUT | → For paper cut.
(When pushing this [CUT] button during printing, printing is stopped.)

| SKIP | → Not in use

| OPEN CLOSE | → For door open or close
(When pushing this [OPEN/CLOSE] button during printing, printing is stopped.)

| MENU | → For menu operation.
If MENU button is pushed, door panel is half opened and sub panel is appeared. MENU is indicated. When closing MENU, it can be used.

| FEED | → For paper feed
(When pushing this [FEED] button during printing, printing is stopped.)

Buttons in sub panel, [<] [>] [∧] [∨] buttons can be used.
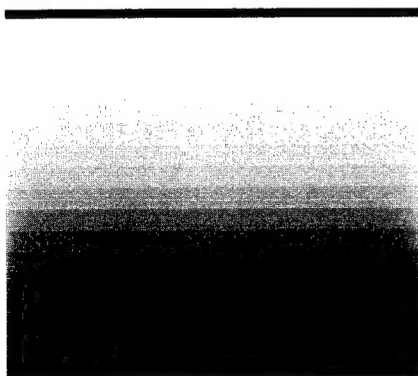Selection of MENU and settings are performed by these buttons.

2. MENU DISPLAY

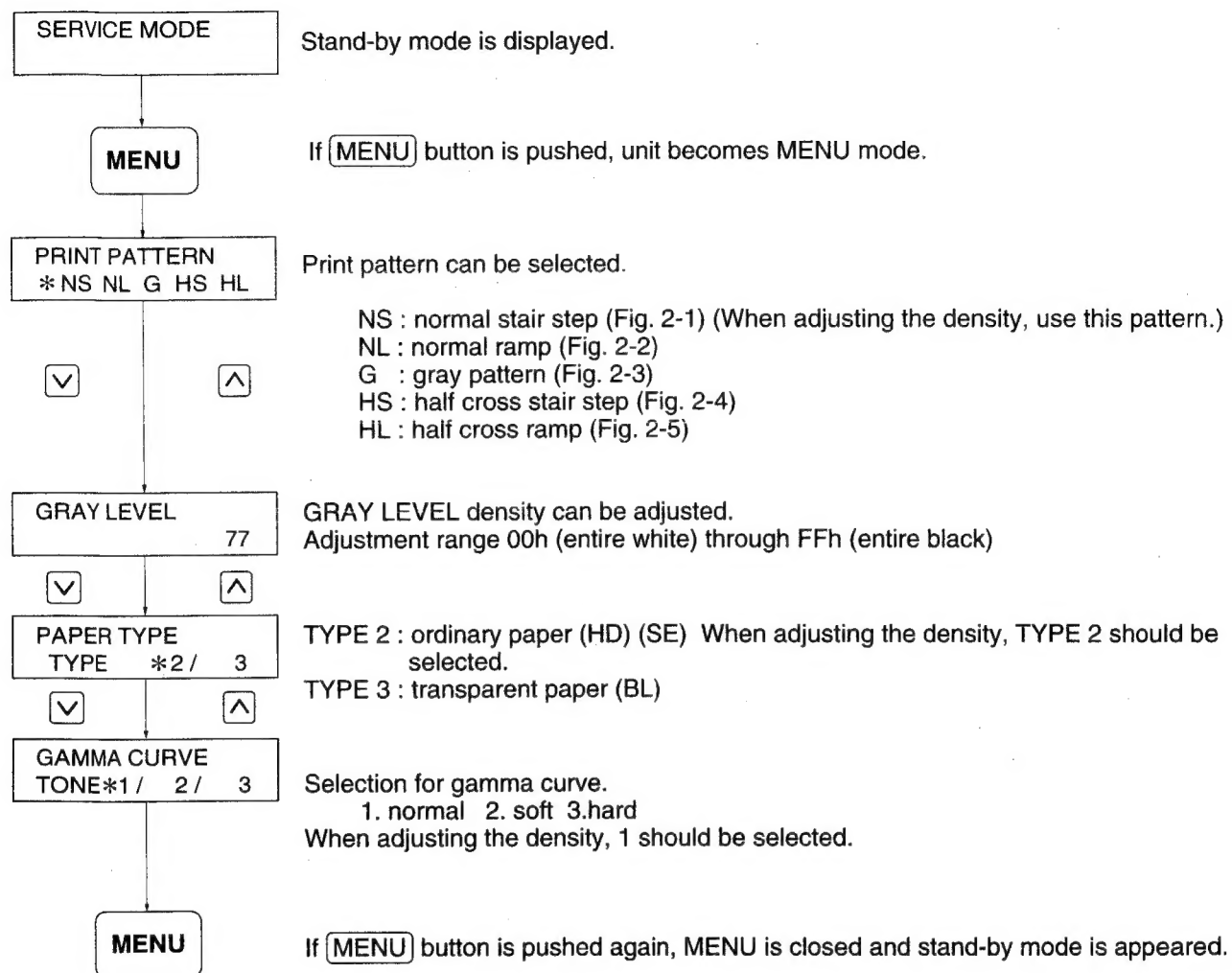|	
SERVICE MODE	Stand-by mode is displayed.
↓	
MENU	If MENU button is pushed, unit becomes MENU mode.
↓	
PRINT PATTERN ✳NS NL G HS HL	Print pattern can be selected.
⋁ ⋀	NS : normal stair step (Fig. 2-1) (When adjusting the density, use this pattern.) NL : normal ramp (Fig. 2-2) G : gray pattern (Fig. 2-3) HS : half cross stair step (Fig. 2-4) HL : half cross ramp (Fig. 2-5)
GRAY LEVEL 77	GRAY LEVEL density can be adjusted. Adjustment range 00h (entire white) through FFh (entire black)
⋁ ⋀	
PAPER TYPE TYPE ✳2 / 3	TYPE 2 : ordinary paper (HD) (SE) When adjusting the density, TYPE 2 should be selected. TYPE 3 : transparent paper (BL)
⋁ ⋀	
GAMMA CURVE TONE✳1 / 2 / 3	Selection for gamma curve. 1. normal 2. soft 3.hard When adjusting the density, 1 should be selected.
↓	
MENU	If MENU button is pushed again, MENU is closed and stand-by mode is appeared.

Fig. 2-1 : NS (normal stair step)
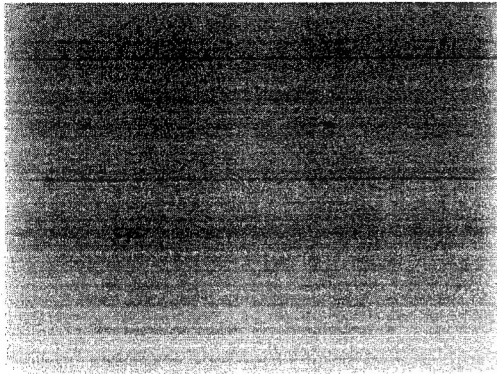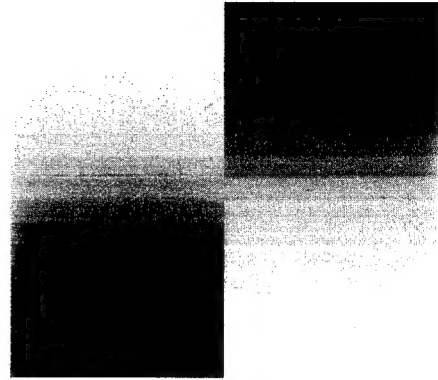
Fig. 2-2 : NL (normal ramp)

Fig. 2-3 : G (gray pattern)
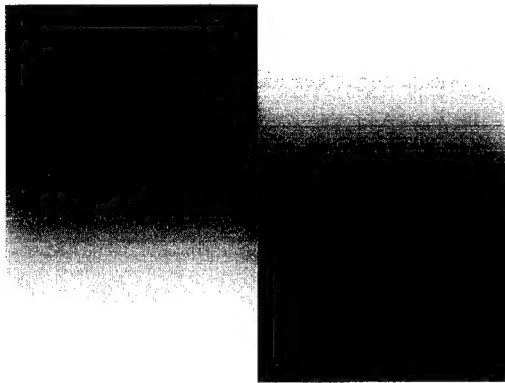

Fig. 2-4 : HS (half cross stair step)

Fig. 2-5 : HL (half cross ramp)

3. NOTES

When printing

If print is performed when thermal head is placed at where pressed to platen by COPY button, the gear may be broken. When print is needed, thermal head should be returned at HOME position. In case, thermal head position is not recognized where it is, turn off the power of the unit. And turn on the power with service mode again. The thermal head is returned to HOME position. Production units from June '98 (following serial number) are solved above situation using with IC505 (system control soft wear).

UP-980 (UC)   : 10,111 and later
UP-980CE (CE) : 50,121 and later

Print pitch

In case video signal is inputted or not inputted, print pitch is changed.
Video signal is inputted : Automatically adjusted by matching with input signal.
No video signal input : print pitch of default is used.

Density adjustment

When performing density adjustment, paper should be used with ordinary HD paper.
And MENU is set as following condition. Then print should be performed.
TEST PATTERN   → NS
PAPER TYPE   → 2
GAMMA CURVE → 1
Print should be performed better with no video signal input.